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THE MADRAS
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PART I.

ORIGINAL ESSAYS.

ART. I.—*Contributions to Ophthalmic Medicine and Surgery.* By GEORGE SMITH, M.D., Principal of the Medical College; Professor of Ophthalmology, and Superintendent of the Eye Infirmary.

(Third Series.)

THE object of the following contribution is essentially a practical one. It is, to furnish some materials towards a solution of the hitherto unsolved question—Is extraction a warrantable operation for the cure of cataract in the case of the native of Southern India? This question is one of great importance, and I shall esteem myself fortunate if the experience recorded in the subjoined table be found, in any way, to bear practically upon its solution.

A table showing the results of 50 *cases of Cataract in Nativ*

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Upper or lower section.
1	Bastian	70	M	Good	Mixed ; non str(1)	Right	Right	1863 25 Aug.	Upper.
2	Vencatachellum	46	M	Fair	Mixed ; non str,	Right	Right	28 Aug.	Upper.
3	Luchmee	55	F	Good	Mixed ; non str.	Right	Right	16 Sept.	Upper.
4	Paupah	58	F	Bad	Mixed ; non str.	Right	Right	24 Sept.	Upper.
5	Nynatha	50	F	Good	Mixed ; striated.	Left	Right	24 Sept.	Upper.
6	Polliam	66	F	Fair	Cortical ; non str.	Both equally advanced	Right	24 Sept.	Upper.
7	Luchmunen	58		Bad	Cortical ; striated.	Right	Right	24 Sept.	Upper.
8	Francis	60	M	Good ; habits irregular.	Nuclear.	Right	Right	24 Sept.	Upper.
9	Arnagherry	60	M	Good	Mixed ; non str.	Left	Left	29 Sept.	Lower.

---

1. *i. e.*, Non striated periphery.

of the Madras Presidency, treated by extraction.

Complications, &c., during the operation.	Affections following the operation.	Result.	REMARKS.	No.
None.	Minute ulcer at edge of flap with slight vascular congestion. Slight film in pupil.	Successful.	Vision good.	1
None.	None.....................	Successful.	Vision very good.	2
None.	Very minute prolapse of the iris.	Successful.	Vision very good.	3
None.	An attack of catarrhal ophthalmia in both eyes.	Successful.	On June 22nd the anterior operation for solution was performed, and repeated on August 14th. No decided progress being made, the lens was extracted on the 24th Sept. Vision good.	4
None.	Slight keratitis.........	Successful.	The left lens had been depressed by a native operator. Sight nearly gone. Vision useful.	5
Eye small; deep-set. Pupil contracted. Pupil enlarged with iris scissors; posterior synechia. Lens scooped out.	None.....................	Unsuccessful.	August 1st, anterior operation for solution was performed on left lens. August 14th, operation repeated. Retinæ of both eyes totally insensible.	6
Palpebral fissure small, eye deep-set.	Purulent infiltration of cornea, atrophy of the globe.	Unsuccessful.	August 1st, right lens acted upon by needle for solution. Catarrhal ophthalmia. 24th, operation repeated. Extracted lens, had a small amber nucleus.	7
Patient unsteady; corneal flap rather small.	Prolapse of iris, exudation of lymph into pupil. January 22nd 1864, operation for artificial pupil.	Unsuccessful.	This patient left hospital at a time when the eye was beginning to appreciate light, and when some hope of restoration of vision was entertained.	8
Base of orbit of very contracted dimensions.	Slight catarrhal ophthalmia; slight keratitis, limited to edge of section. Union of section arrested for a time.	Successful.	This patient was very careless of his eye. He finally left hospital with good vision.	9

A table showing the results of 50 *cases of Cataract in*

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Up lo sec
10	Moothoo........	60	M	Good ...	Mixed ; non str.	Right ...	Right ...	1863 12 Oct.	Up
11	Vencatachellum (vide case 2.)	46	M	Fair ...	Mixed ; non str.	Right ...	Left ...	12 Oct.	Low
12	Poonen...........	65	M	Bad ...	Mixed ; non str.	Left ...	Left ...	12 Oct.	Low
13	Peermah.........	68	F	Bad ...	Mixed ; non str.	Left ...	Right ...	12 Oct.	Up
14	Veerasawmy....	40	M	Good ...	Cortical ; non str.	Left ...	Left ...	5 Nov.	Low
15	Seeneevassen ...	54	M	Fair ...	Nuclear.	Right ...	Left ...	5 Nov.	Low
16	Kistapen.........	54	M	Bad ...	Mixed ; faintly striat.	Left ...	Left ...	5 Nov.	Low
17	Ramiah..........	60	M	Bad ...	Mixed ; non str.	Right ...	Right ...	5 Nov.	Up
18	Nynacharry......	54	M	Bad ...	Mixed ; striat.	Right ...	Right ..	11 Dec.	Up

dras Presidency, treated by extraction—(Continued.)

ations, &c., he opera- ion.	Affections following the operation.	Result.	REMARKS.	No.
....	Slight conjunctival congestion.	Successful.	Vision good.	10
....	Slight prolapse of iris; an attempt to re-place it increased it. Lid acts injuriously upon it.	Successful.	Vision good, and daily improving.	11
m. No diffi- r complica-	Purulent infiltration of the cornea. Iritis. Cornea became opaque.	Unsuccessful.	An old anemic man.	12
....	Keratitis set in on 3rd day, effusion into anterior chamber, purulent infiltration of cornea, prolapse of iris.	Unsuccessful.	A risen cataract after depression (native operation) in left eye. Two attempts at artificial pupil were made, but without success.	13
muscular ; lens in e shot out some force, panied with le vitreous ir.	None.	Successful.	Vision good. Pupil large and somewhat ovoidal.	14
much atro- and of a lack colour, ot out, with e vitreous, by pasm of the es.	Slight keratitis; exudation extended from edge of section to the pupil; edge of section sloughed, pupil contracted.	Successful.	The right lens had, a year before, been operated on for solution. The operation had failed. Vision good.	15
ntracted, iris d on escape s; some vi- escaped.	Keratitis, exudation extending from section to the pupil. Pupil blocked up.	Unsuccessful.	Patient absconded.	16
fell forward, the section completed ut injury to	Prolapse of iris. Has a severe phthisical cough of an asthmatic kind.	Successful.	The prolapse resulted from a severe fit of coughing, and for some days increased gradually. Vision good.	17
....	None.	Successful.	A spirit drinker. Vision good.	18

A table showing the results of 50 *cases of Cataract in Natives*

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Upper or lower section.
19	Bauliah..........	60	M	Fair ...	Nuclear and glaucomatous	Left ...	Right ...	1864 2 Jan.	Upper.
20	Vencataroyaloo.	40	M	Bad ...	Mixed ; non str.	Right ...	Right ...	2 Jan.	Upper.
21	Lydia.............	16	F	Good ...	Cortical.	...	Left ...	5 Feb.	Lower.
22	Ratha Bhaee....	50	F	Good ...	Nuclear.	Left ...	Left ...	12 Feb.	Lower.
23	Appoo Moodliar	60	M	Bad ...	Mixed ; non str.	Right ...	Right ...	16 Mar.	Upper.
24	Nunnee Bee.....	48	F	Good ..	Cortical ; non str.	Right ...	Right ...	21 Mar.	Upper.
25	Annasawmy.....	52	M	Fair ...	Mixed ; non str.	Right ...	Right ..	12 Apr.	Upper.

f the Madras Presidency, treated by extraction—(*Continued.*)

Complications, &c., during the operation.	Affections following the operation.	Result.	REMARKS.	No.
None..................	Keratitis; purulent infiltration of cornea. Prolapse of iris. Insensibility of the retina.	Unsuccessful.	This patient ought not to have been operated on.	19
None..................	Keratitis; pus in anterior chamber; chemosis; ophthalmitis.	Unsuccessful.	A spirit drinker.	20
Vitreous slightly diffluent; lens removed by Schuft's scoop; no difficulty.	Inflammation of the edges of the section.	Successful.	A year before both lenses had been reclined; right pupil irregular and adherent to opaque mass; risen lens not adherent to the iris in the left eye. Vision good.	21
Deep-set eyes; no difficulty or complication.	Conjunctivitis; keratitis; band of exudation passes from inner margin of section to the pupil. Pupil contracted considerably.	Successful.	Had catarrhal ophthalmia before the operation. Vision useful, but field limited.	22
None..................	Edges of section ulcerated slightly; cicatrix opaque.	Successful.	A weak, anemic, emaciated old man. The cataract had a cortical look, and was acted upon twice by the needle; absorption having failed, the lens was extracted through a small incision by Schuft's scoop. Vision good.	23
None..................	None.	Successful.	The anterior operation for solution was performed thrice upon the lens before extraction. The lens was removed by a limited section. Vision good.	24
Slight posterior synechia; eye deep-set, capsule adherent to iris; on removal, some vitreous humour escaped.	Conjunctival congestion.	Successful.	Had suffered from syphilis. A troublesome patient, who did his eye but little justice. He absconded. Vision useful.	25

A table showing the results of 50 cases of Cataract in Natives

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Upper or lower section.
26	Seeva Ram……	70	M	Fair …	Mixed ; non str.	Left …	Right …	1864 12 Apr.	Upper.
27	Nella Moothoo.	65	M	Fair …	Nuclear.	Left …	Right …	22 Apr.	Upper.
28	Luchmoo………	52	F	Good …	Mixed · striat.	Left …	Left …	23 Apr.	Upper.
29	Moothien………	72	M	Bad …	Mixed ; non str.	Right …	Right …	26 Apr.	Upper.
30	Ratha Bhaee…. (case 22.)	50	F	Good …	Nuclear.	Left …	Right …	28 Apr.	Upper.
31	Moothee.. ……..	54	F	Good …	Mixed ; non str.	Right …	Left …	18 May	Upper.
32	Vencatachellum	54	M	Good …	Mixed ; non str.	Left …	Left …	31 May	Lower…

dras Presidency, treated by extraction—(Continued.)

tions, &c., he opera- on.	Affections following the operation.	Result.	REMARKS.	No.
....	Outer groove of section slow in filling up.	Successful.	The left eye had been operated on 10 years before for solution. Vision was lost; cornea opaque. Vision good.	26
....	Film of capsule in pupil; kerato-iritis; exudation in the area of the pupil. Anterior chamber nearly filled with lymph. Cicatrix of cornea has a fatty look.	Successful.	The left lens had been depressed by a native operator. Vision nearly gone. The depressed lens has risen. Useful vision was restored to the right eye on lacerating the film in the pupil.	27
....	A little capsule in area of pupil.	Successful.	The left lens had been twice operated on for solution, but no absorption followed. Vision useful and good.	28
....	Keratitis; chemosis; general opacity of cornea; cornea cleared, except centrally. Perception of light; no vision.	Unsuccessful.	An old man, anemic, with unhealthy skin and feeble vitality. This case ought not to have been operated on.	29
....	Catarrhal ophthalmia; kerato-iritis; pupil blocked up with fine membrane, which was acted upon by the stop needles.	Unsuccessful.	This woman had deep-set eyes, a small palpebral fissure and chronic ophthalmia tarsi.	30
rygium in ye; small left. Eye, t. Palpe- sure small; knife used. n capsule; th some vi- escaped.	Slight congestion of the sclerotic. Slight weakness of the cicatrix.	Successful.	Albinismus of skin of the lids of both eyes. Vision very good. Pterygium has disappeared.	31
....	Inflammation of edges of section; adhesion by first intention interfered with.	Successful.	Vision good.	32

A table showing the results of 50 cases of Cataract in Natives

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Upper or lower section.
33	Miriam Bee......	64	F	Fair......	Mixed; non str.	Right ...	Left ...	1864 5 Sept.	Lower ...
34	Annamallay.....	58	M	Good ...	Mixed; non str.	Right ...	Left ...	14 Sept.	Lower ...
35	Chowreemoothoo	64	M	Bad......	Mixed; str.	Left ...	Left ...	9 Oct.	Lower ...
36	Anthony.........	58	M	Bad......	Nuclear	Left ...	Left ...	9 Oct.	Lower ...
37	Vencatamah. ...	45	F	Good ...	Mixed; striated.	Left ...	Left ...	16 Oct.	Lower ...
38	Miriam Bee ... (case No. 33.)	64	F	Fair......	Mixed; non str.	Left ...	Right ...	29 Oct.	Upper...

f the Madras Presidency, treated by extraction—(*Continued.*)

Complications, &c., during the operation.	Affections following the operation.	Result.	REMARKS.	No.
No difficulty or complication. The cornea cut soft, and after extraction of the lens the flap fell back with an anterior concavity.	Sub-acute keratitis...	Successful.	A poor, old, emaciated woman. Vision excellent.	33
None..................	Very minute linear prolapse, a black line shewing the presence of the iris-tissue between the lips of the section.	Successful.	Vision very good.	34
The capsule blocked up the pupil after removal of the lens, and in taking it away with the iris-forceps a little vitreous escaped.	Fever. Cornea infiltrated with pus. Atrophy of eye-ball	Unsuccessful.	A feeble and emaciated old man of dissipated habits.	35
None................	Union of section rather slow; a little capsule in the pupil.	Successful.	A spirit drinker. Vision good.	36
None..................	Slight prolapse of iris.	Successful.	She returned with an attack of catarrhal ophthalmia of left eye. The cicatrix became enfeebled, and the curve of the cornea altered slightly. She was discharged with useful vision.	37
Eye deep-seated; mechanical difficulty in consequence. Lens in its capsule with a little vitreous escaped. The corneal flap was folded down by the lid.	The lower lid, from swelling of its tissues, became somewhat inverted and irritated the eye and the section. Distorted pupil, probably from iritis.	Unsuccessful.	Vision existed but to a limited extent when this patient left hospital.	38

A table showing the results of 50 *cases of Cataract in Natives*

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted	Date of extraction.	Upper or lower section.
								1864	
39	**Moorgapen...** ...	40	M	Bad... ...	Nuclear.	Left ...	Left ...	10 Nov.	Lower ...
40	**Ayamah...**	59	F	Bad... ...	Mixed; non str.	Both simultaneously.	Left ...	26 Nov.	Lower ...
41	**Veerappen**	60	M	Bad... ...	Mixed; non str.	Right ...	Left ...	26 Nov.	Lower ...
42	**Chanee...**	68	M	Bad... ...	Mixed; non str.	Both simultaneously.	Right ...	26 Nov.	Upper ...
43	**Cunnyamah** ...	54	F	Good ..	Mixed; non str.	Left......	Left......	10 Dec.	Lower ...
44	**Veerappen**... ... (case 41.)	60	M	Bad	Mixed; non str.	Right ...	Right ...	23 Dec.	Upper ...

Madras Presidency, treated by extraction—(*Continued.*)

plications, &c., ing the operation.	Affections following the operation.	Result.	REMARKS.	No.
t pressure re- ired to start the s; the iris was ised during the sage of the lens.	Corneal section united, then opened again; its edges ulcerated. The aqueous humour drained away through a fistula. All means failed to cause adhesion of the edges of section. Rest of cornea clear.	Unsuccessful.	Looks older than his reported age; a spirit drinker. On leaving hospital, this patient had just vision enough to see to find his way about.	39
....	Inaction of edges of section, with tendency to ulceration. Prolapse of iris. Pupil contracted. Fistula of the cornea. Anterior synechia. Cicatrix broad, but not firm.	Unsuccessful.	An old anemic woman. An artificial pupil may be formed by and by.	40
....	None..................	Successful.	A pensioned Sepoy in very poor circumstances, anemic and emaciated.	41
nall portion of s fell across the ge of the knife d was snipped rough.	None...................	Successful.	The left lens had been depressed by a native operator. All vision gone. Patient a dissipated miserable-looking man. Vision very good.	42
e.	Slight prolapse; incorporation of prolapse with edges of section slow.	Successful.	Vision good.	43
siderable ocular pasm from timidity. The lens, in its apsule, with some itreous passed ut with a jerk.	The edges did not adhere rapidly; slight tendency to ulceration. Catarrhal ophthalmia attacked both eyes.	Successful.	Vision of both eyes good.	44

A table showing the results of 50 *cases of Cataract in Natives*

No.	Name.	Age.	Sex.	General health.	Kind of cataract.	Which more advanced.	Which lens extracted.	Date of extraction.	Upper or lower section.
								1865	
45	Vencatasawmy.	65	M	Fair......	Nuclear.	Neither more advanced.	Left......	17 Jan.	Lower...
46	Vaimblyamah ..	68	F	Bad... ...	Glauc.(1) cataract.	Right...	Left......	17 Jan.	Lower...
47	Sithambarum..	68	M	Good ...	Mixed; non str.	Left......	Right ...	16 Feb.	Upper...
48	Coomarappen...	54	M	Fair... ..	Nuclear.	Right ...	Left ...	16 Feb.	Lower ...
49	Pursooramen ..	58	M	Good ...	Mixed; non str.	Right ...	Left ...	23 Feb.	Lower...
50	Chinnamah	60	F	Bad... ...	Mixed; non str.	Right ...	Left ...	23 Feb.	Lower ...

(1) Glaucomatous Cataract.

adras Presidency, treated by extraction—(Continued.)

ications, &c., g the operation.	Affections following the operation.	Result.	REMARKS.	No.
rather small, not, however, ire to be en- d.	None...	Successful.	Has been a spirit drinker. Good vision.	45
was staphylo- f the sclerotic e lower aspect e eye-ball. No ulty or com- tion in the ation.	Subacute congestion of the eye.--Retina almost insensible to light.	Unsuccessful.	An old, emaciated, poor woman. Right eye atrophied, and vision gone. Left eye with nuclear cataract, and chronic glaucoma. *This patient ought not to have been operated on.*	46
....	Prolapse of iris. Pupil a little tucked up.	Successful.	Vision good.	47
et eye. Muscu- spasm. Wire ulum insert- and extraction ormed with- difficulty.	Cornea infiltrated with pus. Slight uneasiness and itching occurred in the eye, on the night after the operation, to relieve which he rubbed the injured organ very freely.	Unsuccessful.	An old, frail, restless man. I think this case would have done well, had the old man been more careful.	48
to spasm of muscles the speculum used. No er difficulty. lens was loos- d by the spasm.	Very slight prolapse of iris.	Successful.	The right lens was depressed 18 months ago; vision is almost lost. Vision good.	49
....	Slight delay in union of section; slight tendency to ulceration at one point.	Successful.	An old, emaciated, frail woman with shaking palsy of the head. Vision good.	50

The poorer class of natives considered as patients.

Natives of the lower classes constitute a majority of the patients of the Eye Infirmary. In such patients, when compared with Europeans, there are mental and physical peculiarities deserving of notice, which must be recognized intelligently before a correct estimate can be formed of the success or want of success which may attend the Medical or Surgical treatment of their diseases.(1) The first point which, perhaps, attracts attention, is the great obtuseness of sensibility of the nervous system of the poorer classes of natives. Diseases of the eye and operations upon it cause far less discomfort and pain to the native than to the European ; hence a great difference is observed between the type of subjective symptoms as they occur in the native, and as they are laid down in works on Ophthalmic Medicine and Surgery, when the experience recorded has been founded upon European practice. In the case of the native, the presence, for example, of a foreign body, is not always a cause of discomfort ; he allows, moreover, his eye to be freely handled, and strong collyria to be applied to the conjunctiva without expressing much uneasiness, and he frequently presents himself at hospital with eyes and eyelids in a state of filth and neglect, which would be totally intolerable to the poorest European.

This bluntness of sensibility is further seen in the little tendency exhibited by one eye to resent the diseased action of the other, and in the indisposition manifested by the general system to sympathize with local disease. A similar hebetude affects the mind ; sensibility has not been developed by education ; to the poor native the present is everything, the future nothing ; he has little forethought, and, consequently, is but little troubled with care or anxiety as to results and consequences. With diseased eyes and gradually impairing vision, the native performs his day's work for his day's wage, and goes on undisturbed so long as he has vision enough left in one eye to perform what is absolutely necessary. When vision fails, and he can no longer

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(1.) The subject of the influence of race on the results of Surgical operations is a very interesting one. Indian Surgeons are thoroughly familiar with this influence, as it affects the natives of this country, and have no hesitation, when needs be, in breaking through " Principles" of Medicine and Surgery, which, however applicable to Europe, they know at times to be inapplicable to 150 millions of the human race. M. Chauffard has lately called attention to the influence of race on the results of Surgical operations as between France and England.—Vide *Medical Times* and *Gazette*, Nov. 7, 1863, p. 494.

earn his daily food, he betakes himself to a native operator, or he presents himself for admission to hospital. In hospital, so long as his wants are provided for, he makes himself both comfortable and contented under circumstances which, to an European, would be full of gloom and anxiety. Sufficient food, a little arrack, good shelter and daily betel, a reasonable liberty of movement and undisturbed permission to sleep whenever so inclined, are present blessings fully appreciated by him, and, as to the rest, he does not over-distress himself with the apprehension that he may have to leave the hospital blind, to beg in the bazaars his daily bread.

Poor, anemic, and ill-fed ; often the victim of intemperance, syphilis, and mercury ; frequently strumous and covered with itch, his system does not warrant and will not tolerate any treatment of a depressing kind ; on the other hand, his vital powers respond rapidly and remarkably to the support afforded by good diet and arrack, which latter is to him both food and stimulus. Inflammatory action in such a constitution often manifests an asthenic tendency, and runs rapidly to destruction of tissue, unless the crisis can be tided over with good food, tonics, and stimulants.

At a time of life when the European is in his prime, the native shows evidences of old age and of senile marasmus of tissue ; grey hair, wrinkled lack-lustre skin, cataractous lenses, and arci-seniles testify that the native is older *pathologically* than the European of the same age.(2)

As a patient, the native is afraid of operations, and so timid that, if the day of operation be fixed upon beforehand, he will, on getting an inkling of the fact, abscond from hospital ;(3) but if he be taken to the operating room without warning, no operator could desire to have a more quiet, resigned, and docile patient ; he retains his presence of mind, exhibits little fear or alarm, and, in the case of operations on the eye, seldom, if ever requires the administration of chloroform.(4) The operation over, he is quite tranquil ; no anxiety depresses him, and he would be a

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(2.) The poorer native at 40, *is the pathological equivalent* of the European at 55 or 60 years of age.

(3.) This is the objection to Rule 4, Section 13 of the Medical Code, which fixes the operation days to Mondays.

(4.) Natives are less steady when *a second* operation has to be performed.

model patient, were it not for his provoking want of common sense. He will, for example, without thought of consequences, remove the straps or bandage from the eye operated on, and will use the injured organ or handle it roughly, although he has been repeatedly assured and warned that such imprudence must lead to the total destruction of the organ. He has much patience and endurance, and, except from his want of common sense, gives but little trouble.

The educated native of the better class, on the other hand, has a type of constitution more resembling that of the European. The sensibility of the nervous system is in him developed by education, pain is more acutely felt, and the system, as a whole, is more prone to sympathize with local disease.(5)

The patients admitted to hospital for the purpose of undergoing the operation of extraction are either aged and anemic, or aged and cachectic. As a rule, they require rest, good food, and stimulation before the operation is performed, as well as during the whole period which intervenes between the operation and their final discharge from hospital. With good diet and stimulants, the eye of the aged patient, even when anemic and suffering from senile marasmus, stands a fair chance ;(6) but the chances of success are more or less against those who have been spirit-drinkers to excess, or whose blood has been poisoned with mercury, syphilis, &c. Patients from the country are generally more hopeful cases than those from Madras itself, because less addicted to the debilitating habits and vices of city life, and less likely to be the victims of mercury, drink, and enthetic diseases.

Results of extraction.

Before proceeding to analyze the results exhibited by the table of cases above given, I may be permitted, for the sake of comparison, to give the results of his practice published by Dr. Archer in his Report of the Calcutta Ophthalmic Hospital,

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(5.) The fact, that increased mental culture generates increased susceptibility of the nervous system, and consequently increased susceptibility to mental suffering and pain, is perhaps hardly sufficiently recognized. Does it not, however, favor the claim of *medical* to go hand-in-hand with *general* education in India ?

(6.) Von Graefe regards the prognosis of extraction as bad when the operation has been performed in cases where the senile marasmus is out of proportion to the age of the patient—*Ophthalmic Review*, No. 3, p. 245.

along with the recorded success of Dr. Macnamara, of Mozzuferpore, and the latest record of personal experience given by Professor von Graefe of Berlin.

Dr. Archer, in his Report of the Calcutta Ophthalmic Hospital, May 1863, gives the number of patients operated on during the year for extraction as 85, with 14 failures, or about 16½ per cent. of unsuccessful cases. Dr. Macnamara, of Mozzuferpore, gives a proportion of 75 cured, 10 relieved, and 15 failed per cent.(7) Graefe remarks as follows ;(8) " I calculate that out of every 100 extractions, 65 yield a complete result ; of the remaining 35, fifteen yield perfect results from after-operations, either that for secondary cataract or combined with iridectomy. Of the remaining 20, about one-third regain, at any rate, sufficient vision to find their way about by themselves ; a second third regain less amount of sight ; whilst 6 to 8 per cent. of all the eyes operated on either remain or become completely blind, *i. e.*, incapable of recognizing anything, whether they possess quantitative perception of light or not. This is the final result of all cases of simple cataract requiring an operation." Graefe, in this extract, is speaking, chiefly, if not entirely of pauper-patients, hence the results are deduced from a class of cases, the exact counterpart of that from which all the patients recorded in the list are derived.

Out of 50 cases of cataract above recorded, for the cure of which the operation of extraction was performed, 34 terminated successfully and 16 failed, giving a percentage of 68 successful cases and of 32 failures. Of the patients, 32 were males and 18 females. Of the 16 failures, six have prospect of useful vision from after-operations, one case was lost through the carelessness of the patient, and in nine instances the operation entirely failed from causes dependent upon the state of health of the parties operated on.

Of immediately successful cases

Dr. Archer	gives a	percentage	of	85
Dr. Macnamara.....................	do.	do.	„	75
Professor von. Graefe of Berlin.......	do.	do.	„	65
Rossander, of Stockholm............	do.	do.	„	54
Present list..........................	do.	do.	„	68

(7.) Vide article "On the operation of extraction in Cataract."—*Indian Annals of Medical Science*, No. 14, page 489.

(8.) Vide Graefe's Clinical Lecture on Cataract.—*Ophthalmic Review*, No. 3, page 247, October 1864.

I am quite satisfied that my percentage of success would have approximated closer to that of Dr. Macnamara, had I refrained,—as I am free to confess I ought to have done,—from operating upon cases Nos. 6, 7, 19, 29, 35 and 46, and had case No. 48 taken even moderate care of the injured organ. From these data we may safely conclude, that in suitable cases, the operation of cataract will prove successful in natives of India in about 75 per cent., that is, in three-fourths of those operated on.

Selection of cases.

The operation of extraction performed upon patients such as I have described necessitates a somewhat careful selection of cases; a selection, which experience alone can reduce to certainty. The question, then, is a fair one—Upon what grounds, and to what extent has the selection been made in the cases of the 50 patients whose names appear in the above list? In reply, I may remark that the cases were selected with care but not with exclusive strictness. Had the object been to show a minimum of failures, it would have been necessary to have avoided operating upon every case which did not hold out a very decided hope of success; such principle of selection might have established a claim to high operative skill, but it would have done so at the expense of suffering humanity. I hold it to be the solemn duty of the medical man, in such circumstances as those under consideration, to disregard entirely his own professional reputation and credit, and to operate whenever and wherever circumstances do not peremptorily contra-indicate the operation. Acting upon this principle, the conscientious Surgeon must always shew a considerable percentage of failures. On this point, Graefe makes the remark, "Practitioners who submit unfavorable cases to some other operation, or altogether abstain from operating on them, may present far more favorable statistics than those who operate on nearly all old people by extraction, provided, *secundum artem*, the operation is not contra-indicated."(9)

Health.

Of the 34 successful cases, it is reported that the health of 17 was "good."
Do. do. do. 8 was "fair."
Do. do. do. 9 was "bad."

(9.) Vide *Ophthalmic Review*, No. 3, page 247.

Of the 16 unsuccessful cases it is stated that, the health of 2 was "good."
Do. do. do. 4 was "fair."
Do. do. do. 10 was "bad."(10)

A condition of sound health is, as a general rule, easily recognized in the case of the native. I have classed simple anemic cases as "fair," and spanæmic cases as "bad."

Age of patients.

It is difficult to ascertain with accuracy the ages of the poorest classes of natives. In all points connected with dates, sequence of events, &c., their testimony must be accepted with great caution, not because they wish to deceive, but because they take no note of the lapse of time and have no horoscope to indicate the exact year of their birth. The following table of age is founded upon the patients' statements, corrected by personal observation :—

3 cases of operation occurred in persons of 70 years of age and upwards.
21 do do. do. do. 60 do.
19 do. do. do. do. 50 do.
7 do. do. do. do. 40 do.

Of the 3 cases, there were successful 2;(11) unsuccessful, 1
Do. 21 do. do. 13, Do. 8
Do. 19 do. do. 14, Do 5
Do. 7 do. do. 5, Do. 2
— — —
50 34 16

In the column indicating the nature of the cataracts operated on, the term "mixed" cataract occurs, as well as the terms "nuclear" and "cortical."

Mr. Dixon divides cataracts into "nuclear" and "cortical," and his definition of the former is as follows :—"The nuclear form is that met with in old persons, either alone or (much more frequently) in combination with cortical opacity."(12) In the division adopted in the list, I have limited

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(10.) The general health may be bad and yet operations on the eye terminate favorably.

(11.) Graefe remarks (*Ophthalmic Review*, No. 3, page 245.) "Some Surgeons do not admit the deleterious influence of advanced age on extractions. My statistics prove it most convincingly, a considerable diminution of good results occurring in patients after 65, and more especially after 70 years of age."

(12.) Vide "Diseases of the Eye," 2nd edition, page 214.

the term "nuclear" to cataracts with transparent peripheries, and have called nuclear cataracts with cortical opacity "mixed" cataracts. Cataracts of a mixed consistence are more commonly observed in Indian practice than cataracts of a pure nuclear, or pure cortical type. Of the 50 cases recorded in the list, there were mixed cataracts 34, nuclear 11, and cortical 5.(13) That pure cortical cataracts should have been removed by extraction, may appear somewhat unusual, but the reason of the treatment will be considered by and by.

The question, in which lens does the cataractous change more frequently commence, receives no definite answer in the history of the cases before us.

In 25 cases, the more advanced cataract was observed in the right, and in 20 cases in the left eye, while in 5 instances both lenses appear to have become opaque simultaneously.

Operation.

Operation.—Among the conditions indicated by Mr. W. Jones, (vide "The Principles and Practice of Ophthalmic Medicine and Surgery," 2nd edition, page 243,) as "necessary for, or at least favourable to, the successful performance of the operation" of extraction, are the following :—1. "Steadiness on the part of the patient during and after the operation." The native, as already remarked, exhibits exemplary steadiness during, but often vexatious unsteadiness after the operation. 2. "Large palpebral fissure, so that the eyelids may be sufficiently separated to permit the due exposure of the whole front of the eye-ball." As a general rule, this condition is not secured in the case of the poorer natives of this Presidency. Out of 194 cases of adult and aged natives, the length of whose palpebral fissure I caused to be measured, the following results were obtained :—

Length in	3	instances	of the	palpebral fissure		1	inch.
Do.	65	do.	do.	do.		$1\frac{1}{10}$	,,
Do.	121	do.	do.	do.	$1\frac{2}{10}$ to	$1\frac{3}{10}$	,,
Do.	4	do.	do.	do.		$1\frac{4}{10}$	,,
Do.	1	do.	do.	do.		$1\frac{5}{10}$	,,

the average length being about $1\frac{2}{10}$ inches. This ana-

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(13.) Mr. Martin, the late Superintendent of the Calcutta Eye Infirmary, states (Moorfield's Ophth. Hosp. Reports, Vol. 1, page 263) that 63 per cent. consist of cataracts of a mixed kind, and 23 per cent. of cataracts of a soft or fluid consistence.

tomical peculiarity adds somewhat to the difficulties of extraction. 3. "The eye-ball neither much sunk nor very prominent; in the one case, the section of the cornea cannot be well made; in the other, the healing of the wound does not proceed so favorably." I have hitherto experienced no difficulty from prominence of the eye-ball,(14) but considerable difficulty from the small, sunken, deep-set eye of the native. The table, entered in the margin and drawn up for me by Mr. Wilkins, the intelligent Demonstrator of Anatomy at the Medical College, shows that the transverse and vertical diameters of the base of the native orbit are somewhat less than corresponding measurements in European skulls in the College Museum.

Measurements at base of orbits.

European.		Native.	
Transverse.	*Vertical.*	*Transverse.*	*Vertical.*
Inches 1—5¼	1—3 Fem.	Inches 1—4	1—2
,, 1—7	1—2 do.	,, 1—5½	1—4½
,, 1—7	1—5 Male.	,, 1—5	1—3
,, 1—5	1—5 do.	,, 1—5½	1—3
,, 1—6	1—5 do.	,, 1—6	1—4
,, 1—8	1—7 do.	,, 1—7	1—3
		,, 1—3	1—2
		,, 1—5	1—3½
		,, 1—4	1—2
		,, 1—4	1—5
		,, 1—3	1—2
		,, 1—6	1—4½
		,, 1—4½	1—1
		,, 1—4½	1—3
		,, 1—4½	1—2½
		,, 1—5	1—4
		,, 1—5	1—2½
		,, 1—4½	1—3
		,, 1—5	1—3
		,, 1—4½	1—2½
		,, 1—4	1—3
		,, 1—3½	1—3½
		,, 1—5	1—2½
		,, 1—3½	1—2
Average. Inches 1—6⅜	Average. Inches 1—4½	Average. Inches 1—4 61/96	Average. Inches 1—2 85/96

Average transverse diameter of orbit, base—
Native 1 inch 4 61/96 lines.
Do. do. European 1 ,, 6⅜ ,,
Vertical diameter— do. Native 1 ,, 2 85/96 ,,
Do. do. European 1 ,, 4½ ,,

In addition to this anatomical peculiarity, the globe of the native eye is deep-set, the supra-orbital muscles are powerful and prominent, the palpebral fissure is small, and the cavity of the orbit is often very deficient in fat and cellular tissue. 4. "The cornea, healthy in structure (an arcus senilis, p. 21, is no impediment), and of due size and prominence." 5½‴

(14.) A Parsee priest from Bombay was admitted to hospital in order to have extraction performed; he left, however, before the state of his health permitted of the performance of his operation. In his case, the palpebral fissure was very large, and the eye so prominent, that I doubt whether the operation would have been justifiable.

may be regarded as a full sized cornea; in cases of senile marasmus the diameter at times diminishes to 4¾‴, and may be combined with tremulous movements of the globes from atrophic degeneration of the muscles. Arcus senilis is very common among natives, and, among the poorer classes begins to appear very early in life. I have seen it as early as the 25th year. At 40 years of age the arcus is generally well marked. In almost all the 50 cases, the fatty degeneration was present either as arcus senilis or as the annulus adiposus. With Mr. W. Jones, I do not regard the arcus senilis as any impediment to the performance of the operation, but I cannot help thinking that the cicatrix in a well marked case of arcus, is more prone to become fatty, is less firm in its cohesive power, and more likely to be the seat of secondary ulcerations than corresponding cicatrices in healthy corneal tissue. 5. "The iris, free from synechia and not inclined towards the cornea, so that the anterior chamber may be of good width." As already remarked, the corneal diameter of the native is often somewhat reduced, and with this reduction comes diminished size of the anterior chamber. 6. "The pupil natural, freely contracting and dilating according to the degree of light." In the aged native, the structure of the iris undergoes a change, in consequence of which the pupil dilates but little, and only feebly responds to the action of atropine. I have not, however, abandoned such cases, but have either enlarged the pupil with the iris scissors, or, performed iridectomy, after dividing the cornea and before starting the lens.

Many of the conditions regarded as unfavorable to the operation of extraction, are present in the native, but most of these can be overcome by mechanical means, care, manual dexterity, or by modifications of the operation itself. As to the rest, diseases of the cornea, iris, vitreous humour, and deeper tissues of the eye forbid the operation, but I doubt if contracted pupil, moderate posterior synechia, slight synchisis of the vitreous humour, chronic cough, or difficulty of breathing, should prevent our giving the patient the chances of restoration of vision by extraction.

Having prepared the patient for the operation by good diet and stimulants, continued, according to the requirements of the case, for a period varying from one to three weeks, and having during that time avoided, as far as possible, medicine of every kind, I direct the instillation of atropine (gr. 3 ad. ℥i), and endeavour to secure the moderate dilatation of the pupil.(15) An over-dilated pupil favours prolapse of the iris, and, if the vitreous be diffluent, escape of that humour; a contracted pupil is apt to be bruised during the transit of the lens.

Weather.

The state of the weather is a practical point to be attended to; the hot season is, perhaps, the most favorable for the operation, the cold season ranks next, and the wet season last. At any season, sudden changes are prejudicial to the eye which has been operated on. My Apothecary, Mr. Turnbull, has also observed that the acmé alike of the cold and hot seasons is against the well-doing of the corneal section, and of operations on the eye generally. Dr. Archer, of Calcutta observes that the greatest number of failures in his practice occurred in the months of November, December, and January. The list entered in the margin gives the months in which the operation was performed, with the proportion of successful and unsuccessful cases.

MONTH.	No. of cases.	Successful.	Failed.
January	4	1	3
February	6	5	1
March	2	2	0
April	6	4	2
May	2	2	0
June	0	0	0
July	1	1	0
August	1	1	0
September	9	6	3
October	8	4	4
November	8	5	3
December	3	3	0
	50	34	16

In the four hot months of February, March, April and May, 13 out of 16 cases did well; in the four cold months of October, November, December, and January, 13 out of 23 cases proved successful; and in the four rainy months of June, July, August, and September, 8 out of 11 terminated favorably.(16)

In England, operations for cataract are generally performed between March and October, though they may be undertaken at any season, provided, as Mr. Wharton Jones remarks, the weather be mild and steady.

(15.) The free application of this solution, especially if often repeated, is apt to induce catarrhal ophthalmia.

(16.) The smallness of the number operated on makes the success appear in a favorable light.

The moderately hot weather agrees best with the native constitution; during the cold season, especially if the nights are very cold, his vital powers become depressed, and reparative action comes to a stand-still. During the rains, the native constitution is in a critical condition; sudden changes of temperature affect it injuriously in consequence of want of food, clothing and home comforts. I have often seen a sudden change of weather affect seriously almost every operation case in hospital.

As stated in a previous contribution,(17) I invariably operate with the patient recumbent, and adopt the plan of fixing the eye-ball re-introduced by Mr. France. Without this expedient, it would be almost impracticable to operate on many of the cases which present themselves for treatment. It is quite true that the idea entertained by many of our older Indian Surgeons of the inability of the cornea to recover from the operation of extraction, and of the little chance there was supposed to be of the union of the section deterred many of them from attempting this valuable operation; but another reason, equally strong, I have no doubt, existed in the mechanical difficulties to the performance of the operation arising from the contracted dimensions of the orbit, from the small size of the palpebral fissure, and from the deep-set position of the eye-ball itself.

As to the former objections, they were, to say the least, very considerably overrated, and France's suggestion enables us now to grapple with the latter difficulties with considerable prospect of success.

Beer's knife, Sichel's pattern, is perhaps the best shape of blade to use, but it must be of small size. Weiss has made for me blades of three sizes:—

Shape of extraction knife.

1	cutting edge	12	lines long,	breadth of base	3½'''
2	do.	10	do.	do.	2⅔'''
3	do.	8	do.	do.	2'''

I have also had made by him a knife, as recommended by Dr. Macnamara, of Moozufferpore, in which the blade at its junction with the handle is bent at right angles like a bricklayer's trowel, an arrangement which is supposed to give

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(17.) Vide *Madras Quarterly Journal*, No. 15, Article II.

ome advantages to the operator in cases where the eyes are ery deep-set. In all ordinary cases Beer's knives, of the izes indicated above, will be found sufficient.

The patient being laid recumbent, his head upon a firm pilow, his shoulders supported, with forehead and chin upon he same level, the operation is thus performed. Suppose the ase be one in which the right lens is cataractous, and the peration selected be that by the upper section, then the ssistant, depressing the lower lid, directs the patient to look pwards, and seizes the conjunctiva in the middle line f the eye close to the base of the cornea, with a pair f broad pointed dissecting forceps.(18) The grasp of the onjunctiva should be a broad and deep one, and the ornea being brought to a central position, is gently but teadily retained. As soon as the slight spasm passes off, he operator, who stands behind the patient's head, raises the pper lid, steadies the globe with the tips of the fore and iddle fingers of the left hand, and, after touching the cornea nce or twice with the flat surface of the blade to ascerain if the eye be steady, he proceeds to the operation. The ifficulties of section of the cornea soon disappear when expeience has given confidence to the eye and hand. At first, he operator's attention is much distracted; he has to note he exact point of puncturation, the parallelism or otherwise f the blade and iris, the behaviour of the iris itself, and he proper point of counter-puncturation, and these several oints confuse and distract, and lead, it may be, to faiure and disappointment. After a time, however, he finds hat by fixing his attention only upon the points of puncturaion and of counter-puncturation, he may safely allow the emaining difficulties to take care of themselves, provided he as laid his blade parallel with the iris at the moment of ransfixing the cornea. The "tour de main" described in ome works as necessary to prevent the blade from splitting p the laminæ of the cornea, is quite unnecessary, and, if ttempted, is apt to make the hand unsteady, to give the lade a wrong direction, and to lead to the total loss of the queous humour before counter-puncturation can be effected. et the points of puncturation and of counter-puncturation e exactly in the equator of the cornea, and a little in front

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(18.) Mr. Hart, Vide *Lancet*, Oct. 18, 1862, uses broad pointed forceps ithout teeth.

of its base ;(19) pass the blade steadily onwards, and if the point of counter-puncturation be either too far forward or too much backward, the direction may be corrected with a little dexterity. If the corneal section be too close to the base of the cornea, the knife is apt to pick up a fold of conjunctiva, and, in dividing it, to lose its fine edge; besides, in such a section, there is more chance of prolapse of the iris. The blade is pushed steadily on until, in the majority of native eyes, the point almost impinges upon the caruncle ; the blade is then gently withdrawn, dividing the remaining portion of the cornea up to the last tag ; all pressure is now removed, the forceps withdrawn, and the few remaining fibres divided. The eyelids close, and the spasm is permitted to pass away before the rest of the operation is proceeded with. Should the corneal flap fold down, seize with the forceps the cilia of the upper lid, lift the lid from the cornea, direct the patient to look down, and when the flap re-gains its place, drop down the lid gently upon the ball. In very deep set eyes, or where there is great instinctive muscular spasm, it may be necessary to use the wire speculum and dispense with the Assistant's help. This, however, should only be done in cases of great mechanical difficulty, as the pressure of the wire speculum on the globe, and the difficulty of removing it after the section is made, without injurious pressure on the flap, are disadvantages in the way of its employment. In powerful muscular spasm, chloroform should be used; in ordinary cases of extraction, anæsthesia is unnecessary, the pain of the operation to the native being quite inconsiderable.(20)

Suppose the left lens be cataractous, and the operation selected be that by the lower section, then—if the Surgeon be not ambidexter—extraction may be performed thus: the operator, standing by the left side of his recumbent patient, brings him close to the edge of the operating table, and, inclining the patient's head towards the right shoulder,

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(19.) Rossander, in his article on Cataract operations, (Med. Arch. of Stockholm ; Klin-Monatsbl. fur. Augenh, 1864, p. 113, quoted in *Ophthalmic Review*, No. 4, page 352) advocates, along with Iridectomy, a flap with a base four lines in diameter.

(20.) I may mention that my Apothecary, Mr. Turnbull, who has had many years' experience at the Eye Infirmary, states that he has far less trouble with cases of extraction than with cases of reclination or solution ; vomiting and severe pain very often follow the latter, whereas, as regards extraction, vomiting is unknown, and, in the great majority of cases, no pain whatever is complained of.

rests his forearm on the patient's chest, and seizes with a dissecting forceps the conjunctiva at the point indicated before, depressing at the same time the lid with the ring finger of the same hand, so that no pressure may fall upon the forceps; the Assistant then raises the upper lid with an elevator, and keeps it raised without pressing on the globe. With his forefinger the Assistant stretches gently the skin near the outer canthus, and the Surgeon proceeds with the operation as in the former case, the section being downwards. Great care should be taken in dividing the last tag of the cornea, that no pressure upon the eye-ball is present, and that muscular spasm has come to an end; otherwise the lens, if atrophied, along with its capsule and some vitreous may be forcibly ejected from the eye, especially if the latter humour be somewhat diffluent.

It is not necessary to enter into special details of this operation found in every work on Ophthalmic Surgery, but it may be expedient to note one or two points which, though apparently of minor importance, will be found to bear directly upon the success of the operation. Only one eye at a time should be operated on; direct the patient during the operation to keep his mouth gently open, and do not apply any bandage to the other eye; allow all spasm to cease before you divide the last fibres of the cornea; do not be in a hurry to use the cystitome; avoid bruising the iris in starting the lens; see that the flap is properly adjusted and the pupil central and contracted before closing the eyelids, and pass a horse hair or silver wire suture through the skin of the lids of both eyes in the vertical axis of the organ. Thus secured there will be no need of adhesive straps, dossils of cotton, &c.; the only addition required, perhaps, is to smear the closed lids of the eye operated on with a plasma of opium and glycerine to exclude the rays of light, which otherwise would pass through the lids; a shade should then be placed over both eyes and the patient laid in a partially darkened room.(21) Strict injunc-

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(21.) Dr. Macnamara first adopted the suture; he advises its being passed through the skin of the lids before the operation on persons of nervous temperament. Dr. Archer, of Calcutta, uses the silver thread. If the native be trustworthy and sensible, straps as used in England are quite sufficient. Graefe and other Continental oculists apply a "compress bandage." Weiss is now making for me a delicate tubular needle for the transit of the horse hair, which I use as a substitute for the silver wire. Since writing the matter in the text, I have attempted to substitute compresses for the hair suture, and hitherto with success; my experience may be recorded on some future occasion.

tions must be given to the patient as regards rest, quiet, position, diet, manual interference with the eye, shade, &c. If all goes on well the stitch need not be removed for 7 or 8 days, when it is to be snipped and the eyelids bathed gently with warm water. The eye now simply requires to be kept clean, to be protected from light by a shade, and to have the uninterrupted action of fresh air upon it, so that all remaining congestion may be dispelled. With moderate care, the eye becomes soon fit for use, though some time should be allowed to elapse before the patient is fitted with convex glasses. It may seem to be a harsh and barbarous proceeding to stitch the eyelids of patients together, but I am satisfied that, in consequence of the miserable want of common sense on the part of the majority of native patients, it is a precaution of very necessary to success. The insertion of the stitch has other advantages besides that of retaining the lids closed, for it in no way interferes, as straps and compresses do, with the free flow of tears so common soon after the operation, and it obviates those attacks of catarrhal ophthalmia which are by no means infrequent when the eye has been heated with dossils of cotton wool or with other forms of " compress." Light excluded and motion prevented, the eye should be kept cool during the healing of the corneal section. The diet of the patient should be improved after the operation, and the usual stimulants continued; should inflammation of an asthenic type set in, or should ulceration of the edges of the section appear, then, along with good diet and increased doses of arrack, must be given bark and acid, or bark and ammonia. In this way many a threatening case may be tided over its dangers.

Superior and inferior sections.

A good deal has been written lately regarding the comparative merits of upper and lower flaps in extraction. My limited experience inclines me to say that the lower section is more easily performed, and that it possesses some other advantages presently to be noted, but that, as regards ultimate results, it can claim no superiority over the upper section. That some advantage accrues from the protection of the upper lid is very likely, for Graefe remarks that "the average duration of recovery after the upward section is three days less (from twenty-one to twenty-four days in hospital)" than that of cases by the downward section.

Extraction by the superior section was performed	27 times.
Do do. inferior do. do.	23 „
	50
Of 27 superior sections, there succeeded.......	18
„ 23 inferior do. do.	16

Messrs. Hart, Cooper, Mooren, Jacobson and others on the Continent, advocate the lower section. It has the following advantages :—

1. The front of the globe is more superficial in consequence of the slight prominence of the infra compared with the supra-orbital ridge.

2. The fixation of the globe can be secured with one hand, whilst the corneal section is performed with the other.

3. On completing the lower section, the flap is not everted and bruised when the cornea rolls up beneath the upper lid, as often happens in superior sections.

4. The cystitome is more readily used, and with less danger to iris and cornea.

5. The lens is more readily started and lifted out from between the lips of the incision.

6. Fragments of a soft lens and shreds of capsule are more easily extracted.

7. Prolapse of the iris is more easily replaced.

8. Iridectomy or incision to enlarge a contracted pupil is more readily performed.

9. The after-treatment of diseases and complications is more easily conducted.

On the other hand, though prolapse of the iris may not be more frequent by the lower than by the upper section, yet when it does occur to any extent, the lower lid acts more injuriously upon the protrusion than the upper under corresponding circumstances would have done; the upper lid affords also better protection than the lower to the section, for the eye more quickly recovers and sooner tolerates the light, and appears to be less likely to suffer from catarrhal ophthalmia than when the lower section has been performed. A broad cicatrix in the upper section, would also, I think, interfere less with vision and with the appearance of the eye, than a corresponding mark below the equator of the cornea. Upon the whole, however, I am disposed to regard the inferior section as the preferable operation of the two.

Schuft's, Mooren's, Jacobson's, and Bader's operations.

I have as yet had no success with Schuft's operation,(22) consequently I have not attempted Mooren's, which consists in iridectomizing first and proceeding to extract when the eye has recovered from the operation. Both operations (Schuft's and Mooren's) entail too much injury on the native eye, and the latter operation has the additional disadvantage of consisting of two severe operations, performed after a considerable interval, of itself a most serious objection in the estimation of the native, who prefers that what is to be done should be done at once. Jacobson's operation appears to me to have no special advantages, although he states that he has only lost 2 in 100 cases.(23) Mooren and Jacobson both operate by the inferior flap. Jacobson holds the eye steady with a forceps and divides the cornea all but a central isthmus; then he lacerates the capsule, divides the isthmus with a secondary knife, clips the conjunctiva, which, by his method must have been partly divided, removes the lens and iridectomizes downwards. He uses chloroform freely.

I think it is expedient, if possible, to save the iris; I cannot see why the healthy iris should be injured, if the injury can be prevented. Were a large prolapse to take place, were the pupil to be found undilatable and rigid, or were the flap of the cornea too small, then iridectomy would be the necessary resource of the Surgeon, but so many cases of simple extraction get well without iridectomy, in which the form and movements of the iris and pupil remain perfectly normal, that I feel little disposed to adopt an operation which inflicts so serious an injury upon the eye, without corresponding advantage to the treatment. Even von Graefe, the proposer and champion of iridectomy as an operation, only has recourse to it in cases of extraction when "the operation itself has not gone on smoothly," *e. g.*, "if

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(22.) Mooren with Schuft's operation lost 10 eyes in 32. Rossander speaks very unfavorably of Schuft's operation.

(23.) A sketch of Mooren and Jacobson's operations is given by Mr. Carter in the *Medical Times and Gazette*, October 24, 1863, page 432. A paper on Schuft's operation is also to be found in the same *Gazette* for October 3rd, page 357. In Mr. Carter's article it is stated that, from the statistics of the common flap operation, out of an aggregate of 3,000 cases which fell under the care of the most skilful hands, 1 in 12 eyes was lost. Dr. Mooren lost 2 cases in 60 by his operation, and Jacobson had 2 failures in 100 cases; Rossander, who adopts Mooren's method, lost 46 per cent.

of too small a flap, or comparatively too small an opening of the capsule, or the outside of the lens adhering firmly to the capsule, the lens did not easily glide out, but had to be forced out with difficulty. Again, I attach importance to iridectomy, when on account of imperfect apposition of the flap after the operation, the pupil has a tendency to get dragged, and thus to occasion prolapse of the iris. I also perform iridectomy where, a hard cataract of the whole lens-substance occurs simultaneously with a small imperfectly dilatable pupil; where, on account of an unripe cataract, cortical portions of it may have to be either pressed out with difficulty, or even be left behind; or where the former occurrence necessarily takes place on account of the toughness and cohesion of the cortical portions of the cataract. In any case, indeed, which especially runs the risk of an imperfect healing of the wound, iridectomy may be recommended as promising a better result, if circumscribed suppuration should occur."(24)

Dr. Bader(25) proposes to operate by keeping the eyelids open with the spring speculum; a preliminary incision, large enough to admit one blade of a blunt pointed iris or strabismus scissors is made; the cornea is snipped to an extent equal to that generally divided by the knife. The scissors are so used that the eye may be kept steady and frequent introduction of the blade avoided. The eyeball is fixed by forceps. This mode of operating is supposed to have special advantages in cases where there are marked changes in the vitreous humour. I do not know whether Dr. Bader's suggestions have been acted upon by others or not. It is hardly probable that the irregular surface of a section made with scissors should unite as readily as the smooth surface left by the extraction knife.

Complications during the operation.

The list gives an accurate account of the difficulties and complications which occurred during the operations recorded. The iris fell across the edge of the knife once, and a small portion was cut off; no iritis followed and the case did well.(26) In 8 cases a small quantity of vitreous

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(24.) See von Graefe's Clinical lecture on Cataract. *Ophthalmic Review*, No. 8, page 251.

(25.) *Medical Times and Gazette*, October 24, 1863, page 434.

(26) The iris seems to resent a prick with a needle more than a cut with a knife or the snip of a scissors. It resents a bruise of its pupilary margin most of all.

humour escaped; of these five did well; those which failed, did so from causes other than loss of the humour. In cases of moderate loss of the vitreous, there appears to be little tendency to inflammatory action. The pupil ultimately becomes slightly displaced and deformed. In 5 cases, the eye suffered considerably from spasm. It would have been better had I used chloroform in most or in all of these. The iris was bruised twice, in consequence of the passage of the lens through a contracted pupil; both cases failed. Iritis, caused by a bruise of the pupil during the escape of the lens, appears peculiarly apt to end disastrously to the structure of the iris and to vision.(27) In one case I had to enlarge the pupil with scissors, but am now inclined, following Graefe's advice, to regard iridectomy in such cases as the more advisable operation. In two cases, pterygium was present, and in both, the hypertrophied membrane disappeared after the operation; this fact is somewhat difficult of explanation; in both cases the pterygium was partly divided.(28) Once the corneal flap folded down, but was easily re-placed. There are great differences in the elasticity, toughness and crispness of the cornea, which are easily detected by the operator when passing the knife through the structure of that organ.

Complications, &c., following the operation.

The several affections and complications which followed the operation form an interesting portion of the experience recorded.

Cornea. In the operation of extraction one-half of the corneal circumference is divided; the edges of the section are somewhat oblique. If the flap fall properly into its place, the cut surfaces come nearly into contact, the inner edges more closely and accurately than the outer, hence the inner lip consisting of the membrane of Decemet unites and retains the aqueous humour within a few hours, and days or weeks before the outer groove is filled up. In 14 cases(29) immediate union of the flap took place, the line of junction being seen as a sharp thin dark line; the cicatrix was quite transparent, and the curve of the cornea normal. Simple

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(27.) This tendency of the iris to suffer from pressure is one of the dangers which attend the operation of solution. I have seen eyes lost from no other cause.

(28.) A case of the same kind is recorded in the Calcutta "Medical and Physical Transactions," vol. 4, page 257.

(29.) Nos. 4, 2, 6, 10, 14, 18, 24, 25, 31, 28, 41, 45, 42, 50.

congestion alone was present. In 17 cases(30) the union was more or less retarded by prolapse of the iris, inaction of the edges of the cornea, the occurrence of simple or catarrhal ophthalmia, chronic ophthalmia, or by slight inflammation of the lips of the section causing opacity or minute ulceration. In these cases the cicatrix was slightly opaque, but the opacity gradually diminished, leaving the cornea clear and of its normal convexity. In 2 cases(31) union was still more tardily accomplished and continued rather imperfect, shewing a tendency to secondary ulceration, weakness of the cicatrix, and slight yielding at one or more points. Should catarrhal ophthalmia attack such cases, the edges of the section become inactive, soft, and pappy, with a tendency to asthenic ulceration.(32) In 10 cases(33) inflammation attacked the edges of the section; there was considerable opacity with failure of union at one or two points, tendency to softening, ending in secondary prolapse of the iris, in fistula of the cornea, or in effusion of lymph into the anterior chamber. In the less manageable cases these effusions proceeding from the inner margins of the section stretched like a delicate opaque membrane along the anterior surface of the iris and finally gaining the pupil, more or less completely surrounded and obliterated it. In such cases, the concomitant ophthalmia is of the catarrhal type, and the curve of the cornea becomes more or less altered, bulging out somewhat irregularly in the locality of the section. Sometimes the keratitis is attended with progressive sloughing of the edge of the flap. The dead corneal tissue separates in successive sloughs, and when union ultimately takes place, it does so through the medium of a broad opaque fatty cicatrix, which diminishes in size slowly, and to which the iris becomes more or less attached with partial or entire occlusion of the pupil. In 7 cases(34) unhealthy inflammatory action ran on rapidly to circumscribed or

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(30.) Nos. 1, 3, 5, 9, 11, 17, 21, 26, 32, 33, 34, 36, 37, 43, 44, 46, 49.

(31.) Nos. 23, 31.

(32.) In connection with this subject permit me to refer to a very short but interesting paper by Mr. Raleigh "On the operation for Cataract unattended by the necessary inflammation." Calcutta "Medical and Physical Transactions," vol. 4, page 350, for 1829.

(33.) Nos. 8, 15, 16, 22, 27, 29, 30, 38, 39, 40.

(34.) Nos. 7, 12, 13, 19, 20, 35, 48.

general infiltration of the cornea. This inflammation is apt to spread to other structures of the eye, and to end in general ophthalmitis. The cornea sloughs, the iris protrudes, the pupil is occluded with lymph, and ultimately the globe becomes atrophied. The ophthalmia present is of the purulent type.

Thus, out of 50 cases, 31 corneal sections united either immediately or after a short interval; in 2 cases, the union was slow and unsatisfactory; in 10 instances, there occurred more or less severe keratitis, and, in 7, purulent infiltration of the cornea took place. From these facts are we not justified in assenting to the remark made by Raleigh 36 years ago,(35) when, with reference to the operation of extraction in the native of Bengal, he thus wrote—"The disinclination which the native Indian constitution has to take on an excess of inflammation is proverbial. Yet the extraordinary power it has of repairing injured parts, particularly incised wounds inflicted on healthy structures, is not less so; consequently, the supposition of the native constitution being more incapable of regenerating destroyed structures, or of producing re-union of divided ones, than that of the European, would appear rather inconsistent."(36)

Iris.—In 9 cases, iritis took place, either in its primary or in its propagated form; as *primary* iritis it occurred from bruise of the organ; in the *propagated* form it was seen, either as iritis or as kerato-iritis. "This propagated form" remarks von Graefe, "is developed either after or with suppuration of the wound, sometimes owing to the latter exciting an inflammatory process (cell proliferation) on the inner surface of the cornea, and the purulent products passing into the pupilary space; sometimes from the part of the iris next

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(35.) Vide Calcutta "Medical and Physical Transactions," vol. 4, page 351.

(36.) How is it that a truth so clearly stated in 1829 should have been overlooked, as regards extraction, so long? In 1819, Mr. Richardson, the first Surgeon and Superintendent of the Madras Eye Infirmary, operated by extraction on 28 cases of natives of this Presidency; of these, 20 cases proved successful=71 per cent.; in 1820 he seems to have abandoned extraction and to have betaken himself to reclination and solution. Cases of extraction have occurred since then, but the records of the Eye Infirmary are incomplete, and I can give no account of them; out of 18 cases operated on between the years 1864 and 1862, 12 cases turned out successfully, 5 unsuccessfully, and of 1, the final result is not recorded.

interfere very little with the ultimate success of the
tion.

njunctiva.—Simple and catarrhal ophthalmias occur
ently after extraction; as a general rule, they are amen-
o treatment. The irritation caused by the instillation
opine, and by the bite of the forceps during the opera-
are occasional exciting causes of ophthalmia. If the
e kept too long closed or too warm, or too long excluded
air and light, ophthalmia is almost certain to be
d up.

atment.—The principles of treatment after the opera-
have been already indicated. After the stitches are
luced, the opium plasma applied and the shade tied on,
tient is laid upon his back at rest, fluid or semi-fluid
s given him, and he is enjoined not to touch the injured
.(38) In no instance has vomiting been observed after
operation. After the 7th day the eye requires the
lus of air and gentle exposure to modified light, in
that all tendency to congestion may be got rid of.
d pain in the eye, with the sensation as if a grain of
or a hair had got into it, occur about the third day,
is probably prolapse of the iris. The stitch should
moved and the eye examined. If prolapse exists, it

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may be re-placed gently, and light allowed to fall upon the sound eye ; the attempt to re-place the prolapse is not always successful. The Calabar Bean may be used, and the gentle application of a pointed pencil of lunar caustic will arrest the protrusion. Inaction and tendency to ulceration in the edges of the section are best remedied by the application of a solution of the nitrate of silver (gr. 10 ad. ℥ i), and by improving the diet as well as increasing the stimulus. In some asthenic cases, bark and acid, or bark and ammonia are most useful. Strong stimulants are sometimes required to be applied to the section, when union is peculiarly tardy and the edges of the wound are white, soft, pappy, and inactive. Catarrhal ophthalmia is best treated with solutions of lunar caustic of varying strength, and as a common lotion, the lotions of the acetates of alum, zinc or copper will be found most useful. The acetates appear to be preferable to the sulphates.

Limited keratitis generally subsides without treatment ; the severer forms require to be treated with grey powder combined with quinine and morphia till the gums are slightly touched, and with atropine drops or steam and belladonna pigment, chloroform and belladonna being applied to the temple and brows. Should progressive sloughing of the cornea occur, mercurials must be avoided, the diet and stimulants increased, tonics given, and a gently stimulating wash ordered. The daily gentle removal of the loose slough with the forceps materially assists the recovery. Iritis and kerato-iritis must be treated constitutionally with mercurials, such as grey powder combined with quinine and morphia, and locally with atropine, belladonna pigment and the inunction of blue ointment combined with belladonna. The patient's diet need not be altered ; as soon as the crisis is over, the system should be supported freely to make up for the injury to the blood done by the mercurial course. Purulent iritis from a bruise is hardly susceptible of treatment. Purulent keratitis, especially of the circumscribed form, has been treated successfully by von Graefe by means of "firm compress bandages in marastic individuals, in alternation with warm medicated fomentations." By this bandage, firm pressure is kept up upon the flap ; I have had no experience of this mode of treatment.(39) As a general

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(29.) *Ophthalmic Review*, No. 4, page 324.

rule, neither ice nor cold applications agree with the native eye so well as warm.

Diameter and Weight of Cataractous Lenses.

Diameter.	Weight.
4	grs. 1·9
4	,, 1·77
3½	,, 2·54
3½	,, 2·77
4	,, 1·54
4	,, 1·3
3½	,, 2·9
3½	,, 3·16
3	,, 2·09
3	,, 1·43
3	,, 2·39
3½	,, 1·25
3½	,, 2·07
3	,, 1·37
3½	,, 3·47
4	,, 2·22
3½	,, 1·8
4	,, 2·75
4	,, 1·4
3½	,, 2·72
4	,, 1·73
4	,, 1·74
4	,, 2·61
4	,, 1·63
4	,, 2·59
3½	,, 3·01
3½	,, 1·91
3½	,, 2·02
3½	,, 1·78
3½	,, 1·56
Average diameter. $3\frac{7{\cdot}3}{10}$ lines.	Average weight in grs. 2·012.

Size and Weight of Cataractous Lenses.

Mr. Wilkins, the Demonstrator of Anatomy, along with Mr. Harvey, the Assistant to the Professor of Chemistry kindly undertook the trouble of weighing and measuring for me 30 good specimens of nuclear and mixed cataractous lenses which had been preserved in glycerine for various periods of time. In the margin will be found the results. The heaviest lens weighed 3·47 grains and was 3½‴ in diameter; the lightest lens weighed 1·25 grains and was also 3½‴ in diameter. The lens with the greatest diameter measured 4‴, and that with the least diameter 3‴. The table well shows how great a variety in size and weight is exhibited by the cataracts generally classed as "nuclear."

Extraction *versus* displacement.

As spontaneous solution of a cataractous lens is a result very rarely observed,(40) the probability of its occurrence may be left out of calculation, in considering the operative inter-

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(40.) In 1862 I saw at Moorfields Hospital under the care of Mr. Bowman, a case in which spontaneous solution of the lens had far advanced, and in which the sight was progressively improving. Mr. Bowman, if I remember rightly, stated that he had only seen one other such case in his experience. In December 1863, an admirable case of spontaneous solution, with complete restoration of vision, came under my observation in the person of Conductor G. of this city, æt. 46; no vestige of opacity remains in the pupil. In another case I observed the process going on in a patient named D'Silva, in which the soft periphery of a mixed cataract was being ference required for the cure of cataract. In the Eye Infirmary of this city, nuclear cataracts, as a general rule, have been displaced, and mixed cataracts have been treated by combined solution and reclination. These operations have essentially pushed extraction from the field since 1820. Occasional cases have been operated on by extraction, but these were exceptional ones. In considering this matter, it should be borne in mind that operations ought never to be pitted against each other, as if they were antagonistic ; on the contrary, it is most necessary that the sphere and limits of each operation should be carefully indicated, and no attempt should be made to make one the substitute of the other, in those cases which properly fall within the limits which indicate the superiority and applicability of each.

In Europe, the operation of displacement in nuclear cataracts has, except in rare cases, given way to one or other form of extraction. The objections which bear upon displacement are well given in the following extract from Dr. McKenzie's work, approvingly quoted by Dixon in his valuable work on Diseases of the Eye, 2nd edition, page 334 :—

"The principle on which the operations of displacement are founded, is essentially bad. As well might we expect to lodge an entirely foreign body within the eye, and yet no continued irritation take place, no disorganization follow of the delicate textures with which it remained in contact, and no interruption happen to the function of the organ, as that the lens could be pressed into the vitreous humour, and lie there close to the retina, and the eye continue healthy, and vision be preserved. Reclination or Depression is to be thought of only when some insuperable objections exist to division and extraction. I assign them this low rank in the scale, not because the lens is apt to re-ascend after being displaced(41)—for that I consider as rather a favorable event, from the chance it gives of the cataract dissolving after its re-ascension—but because chronic inflammation within the

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absorbed from the anterior chamber, into which it had passed on the capsule giving way ; the nucleus of an amber color was still seen in situ. Several cases of natives have come to my notice, in which spontaneous solution having taken place, small amber nuclei were set free, some of which remained permanently in the anterior chamber, and others passed to and fro through the pupil.

(41.) No. 21 is a case of extraction to remove a re-ascended lens.

eye, dissolution of the hyaloid membrane, and amaurosis, are, I believe, the almost invariable results of a cataract of any considerable bulk continuing undissolved in the situation assigned to it by displacement." By the native operation the lens is simply depressed along with its unbroken capsule. In expert hands this operation is far from being an unsuccessful one, in so far as *present* results are concerned. The native eye is more tolerant of rough treatment than the European eye would be in similar circumstances, but the depressed lens is very rarely absorbed, and sooner or later, the majority of cases operated on lose their vision. Cases come before me, almost daily, in which the depressed lens can be seen unchanged, years after the operation, and in which vision is either reduced to a minimum, or, is totally extinct.(42) A *reclined* nuclear cataract with the capsule lacerated remains "in situ" almost totally unaffected by absorption, and equally with the *depressed* lens leads to the total extinction of vision in the majority even of primarily successful cases.

The *primary* results of the last 40 cases of reclination of hard cataracts, performed in the Eye Infirmary by my predecessors, yield a percentage of 82½ successful cases, a percentage which, compared with 68 per cent., which represents the primary success of extraction, shews results in favor of the less scientific operation; but the superiority of extraction is at once apparent, when we reflect that every case cured by extraction leaves hospital with the *minimum* of vision secured by the operation, and that, as time passes, as the eye becomes more tolerant of light, as all congestion ceases, so vision will improve more and more, with the certainty, moreover, that the disease can never return. Whereas the patient whose cataract has been reclined successfully, leaves hospital with an equal amount of vision, it may be, as did the extraction case, but that amount is to him the *maximum*; rarely indeed does vision ever improve, far more commonly does it begin, gradually, to become impaired; and the eye, moreover, is never free from the risk of re-ascension of the lens. Taking *ultimate* results into consideration, Graefe estimates the success of reclinations to extractions as 5 to 8;(43) "the general re-

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(42.) Nos. 5, 26, 27, 42, 49, are cases in which one eye had been lost from failure of the operation of depression. In all these cases extraction succeeded,

(43.) *Ophthalmic Review*, No. 3, Page 248.

sults of reclination as compared with those of extraction are very unfavorable." Reclination, however, has a class of cases to which it is specially suitable, and in which it would be inexpedient to perform extraction. It is not for a moment to be supposed that in all these reclination will be successful, but in all of them, probably, it will have a better chance of success than extraction. Reclination then may be preferred to extraction :—

1. In cases possessing some constitutional peculiarity as :—in decided cachexias, dependent upon disease, bad habits, &c.; in doubtful conditions of the eye, when severe cough or asthma is also present; in cases where extraction performed on the other eye has already failed.

2. In cases possessing some local peculiarity, as :—in deep-set eyes with small anterior chamber, chronic ophthalmia and atrophied conjunctiva; in diseased cornea with opacities, the result of former ulceration; in decided synchysis oculi with choroidal disease; in various external affections as entropium, ectropium, chronic epiphora, too prominent globe, trichasis, &c.

3. In cases possessing accidental peculiarities, as :—in cases of excessive timidity on the part of the patient, or in instances where the patient cannot remain long enough under observation to warrant the operation of extraction being performed.

In the pithy words of Dr. Mackenzie, "reclination or depression is only to be thought of when some insuperable objections exist to division or extraction." In mixed cataracts, the operation adopted hitherto in the Eye Infirmary, has been that by division and displacement combined,(44) not, as far as I can gather, by division and extraction combined. These compound operations have double dangers, dangers arising from solution as well as from reclination or extraction. Of the two operations I should prefer division combined with extraction, and have succeeded in such cases in removing the nucleus by linear incision without injuring the iris. If the periphery be bulky and soft, division with or without extraction answers very well; but should the nucleus be large and hard, extraction becomes

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(44.) Out of 100 cases of mixed and soft cataract, operated on by my predecessors by solution and reclination, 57 are reported to have proved successful; reclination was generally performed after the 2nd or 3rd application of the needle.

the more satisfactory mode of getting rid of the cataract. Any expedient is preferable to the pis aller, reclination.(45) In the case of extraction, the safety or otherwise of the eye may generally be determined within a month of the operation; after that period has elapsed vision improves steadily, and all danger from the operation, as well as all fear of recurrence of the original disease are at an end, but in cases of displacement the eye operated on is never safe; sooner or later, in the majority of cases, the lens either rises up, or serious complications destructive to vision arise.

It results from what has been said that the closer we approximate to European principles in the treatment of nuclear and mixed cataracts, the better; provided at the same time we do not overlook the marked peculiarities of constitution of the native of India. The native eye will readily recover from simple extraction, but I think it more than likely, that the severer operations proposed by Schuft, Mooren, and Jacobson, will be found to be beyond the vital reparative power of the lower classes of natives of this Presidency.

There remains but one remark to be made in explanation of cases 4, 7, 23, 24, 28, which are instances of the failure of the operation of division, when applied to cortical cataracts in natives above 40 years of age. Below 40 years of age the needle is peculiarly applicable to the treatment of cortical cataracts, and the younger the patient is, the more successful the treatment; but, in the case of the poorer natives who have passed their fortieth year, the vital powers are so enfeebled that absorption of the lens takes place most imperfectly; repeated applications of the needle detach more and more of the superficies of the lens, but absorption becomes arrested, intercurrent inflammations of the iris ensue, and so many unfortunate contingencies are likely to occur, that, in my opinion, it is better to extract at once, on being satisfied, from one trial of the needle, that the progress of absorption is unsatisfactory. Out of the five cases mentioned above, four did well.

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(45). In the "Archiv für Ophthalmologie" 8th volume, Part I, will be found a paper by Dr. C. Ritter, entitled, "Beiträge zur pathologischen Anatomie des Auges nach Versuchen an Thieren," in which the author, by dissection, discovered the immediate pathological consequences of reclination performed on inferior animals; these were, re-ascension of the lens, rupture of the capsule, rupture of the hyaloid, cloudiness, softening and fatty changes of the vitreous, separation of retina from the choroid, and fatty changes in the retina. I have examined several cases lately in which displacement of the lens had been followed by entire extinction of vision, and have found sufficient explanation of the blindness in the serious pathological changes of the optic nerve, retina and vitreous humour revealed by the ophthalmoscope.

The materials now submitted to the profession, derived as they are from personal experience, from the experience of others, and from generally admitted principles, seem to favor the following propositions:—

1.—That the mechanical difficulties arising from the anatomical peculiarities of the native orbit and eye, form no insuperable obstacles to the operation of extraction.

2.—That the cornea of the poorer natives of Southern India unites readily after the operation of extraction.

3.—That, in the native, the success of extraction is as great, as it appears to be in corresponding classes in Europe.

4.—That the special constitution of the native must be considered, in deciding upon the kind of operation to be performed, and in the after treatment to be followed.

5.—That, in the case of the poorer natives, cortical cataracts are removable by absorption *with great difficulty* after the fortieth year of life.

6.—That, within certain limits, the principles of the treatment of cataract followed in Europe are applicable to the disease as seen in natives of this Presidency.

ART. II.—*American Notes.* By HENRY KING, A.B., M.B. CH.L., Ex-Scholar, Senior and Junior Moderator, Trinity College, Dublin; L. M. Rotunda Hospital, Dublin; Assistant Surgeon, Madras Army.

THE following unconnected Notes, made in New York during the winter of 1863-64, may prove interesting to a profession ever eager "either to tell or to hear some new thing," though actuated by nobler motives than they to whom this description was first applied. No doubt all these details of American practice will not be new to all the readers of the *Madras Quarterly Journal,* and all those which are new may not be valuable: but I hope there will a residium, however small, which will combine novelty with instruction. Any person caring for information upon the Hospitals, Medical Schools, Medical Societies, &c., referred to in these Notes, will find it in a recent number of the *Dublin Quarterly Journal of Medical Science.*

1. *Forcible Dilatation of the Rectum.*—On the 16th December 1863, Dr. Van Buren, Professor of Anatomy in the University Medical School, read a paper before the New York Academy of Medicine, in which he advocated forcible dilatation of the rectum as an operative remedy for fissure and other painful affections of the gut. He commenced by stating that the best instrument for rectal examination is a modification of Sims' speculum. This instrument (to the use of which much of the wonderful success with which vesico-vaginal and recto-vaginal fistulæ have been, of late years, treated by Drs. Sims and Emmett, is due), is rather a perinæal retacter than a speculum. It is, of course, unnecessary to describe it here. Any person who has ever seen it used, for the examination of either vagina or rectum, can appreciate its immense superiority to the best of its predecessors. With its aid, as Prof. Van Buren stated, (confessing his incredulity, previous to experience), the entire cavity of the rectum, from the anus to the *sigmoid flexure of the colon*, can be distinctly seen, as I myself can testify.

This instrument, however, he proposes to modify with the view of rendering it more specially applicable to rectal examinations. He would substitute a handle for the second blade; which acts as a handle in the ordinary instrument, and being, generally, of different dimensions from the other blade, enables two specula adapted to two classes of cases, to be combined into one. A 'heel' or curve, of small diameter, for the reception of the sphincter, is introduced between blade and handle; and the edges of the blade are rounded inwardly, to enable the instrument to be swept round and thus to bring into view all parts of the mucous surface of the intestine in turn.

I mentioned these suggested—and, indeed, executed,—"improvements" to Dr. T. A. Emmett, Dr. Sims' very able pupil, partner, and successor, as Surgeon to the Woman's Hospital. He was of opinion that the heel for the sphincter would injure seriously the optical properties of the instrument; that the substitution of the handle for the second blade was a retrograde step, being a return to Sims' *first* instrument, upon which the double bladed speculum was a decided improvement; and, in short, that an ordinary Sims' speculum of the smaller size was superior, for rectal purposes, to the modified instrument proposed by Dr. Van Buren. So far as my own experience goes, I should think the unmodified speculum quite sufficient for the most complete and accurate examination of the rectum.

The passage of hardened fæces produces laceration of the mucous membrane. The result is the formation of an ulcer; generally situated on the posterior aspect of the gut, and oval in shape. This sore, kept from healing by the tonic contraction of the sphincter, becomes unhealthy. Pain, of severe and peculiar character, follows defæcation, in almost every case, after a longer or shorter *interval*. The stretching of the sphincter, in and by the act of defæcation, seems to give temporary relief, and to indicate the mode of cure recommended by the Professor.

These " fissures of the rectum" are treated in three different ways. Firstly, and utterly unsuccessfully, by lotions and ointments. Secondly, by the knife: employed either to divide the sphincter, or the mucous membrane only, the latter method having been accidentally discovered by Boyer, in a case where the restlessness of the patient prevented the performance of the intended operation. Either of these proceedings is effectual; but, involving the use of a knife, is more disagreeable to patients, (who, as a general rule, object strongly to *cutting*), than the third method; and is, in other respects, also inferior to it, in Dr. V—'s opinion.

The third, then, and most effectual procedure for the cure of this painful affection, is forcible dilatation of the rectum; which is thus performed. The two thumbs of the operator are introduced into the rectum, and, while the buttocks are firmly grasped by the fingers, are drawn forcibly apart to the tubera ischii. This violent tension of the sphincter *paralyses* the muscle for a week—a period which, in the majority of cases, allows sufficient time for the healing of the ulcer or ulcers—just as the vesical muscles are paralysed by excessive distension of the bladder. The operation may be repeated, if necessary. Laceration of the mucous membrane, or even of some fibres of the sphincter, may take place during the process without any ill-effect. There is no incontinence of fæces—the internal sphincter being capable of doing double duty, during the temporary retirement from action of its more powerful partner.

Dr. V. had performed this operation in twenty cases, with perfect success, without the occurrence of any accident whatever, and with the result of affording great relief to the patients: who are, he said, generally more grateful for relief in this department of their economy than in any other.

The severe pain which follows the application of the ligatures to hæmorrhoids is due, chiefly or altogether, to the action of the sphincter upon the excessively sensitive parts. This may be, and, in Dr. Van Buren's cases, always is, obviated by forcible dilatation, as above described.

The merit of originality is not claimed for this procedure. It was recommended by Recamier, praised afterwards by Nélaton and others, but not adopted or practised by any of them. None of the English monographs, (Curling's, Quain's, &c.,) mention it. The late Dr. Bush (an eminent practitioner of New York) invented an instrument for dilating the rectum, which he may have used, or intended to use, in these cases: but nothing is known on this point.

I should mention that the position which the patient should assume during the performance of this operation is the same as that recommended by Dr. Sims for his special operations: namely, on the face and left side, the right arm behind the back, the buttocks raised, so as to throw the weight of the intestines off the rectum.

In conclusion, I must add that Professor Van Buren is one of the most eminent surgeons in New York, enjoying a most extensive practice and the highest reputation; and that his opinion upon any professional question is entitled to the greatest respect.

2. *Creosote in Burns.*—At several successive meetings of the New York Academy of Medicine, Dr. Squibb, a high authority on pharmaceutical preparations, made a series of observations on the recently issued Pharmacopœia of the United States, pointing out the changes which had been introduced.* One of the new preparations is *Aqua Creosoti,* which has been found to be a most valuable application to burns and scalds. Diluted with an equal quantity of water, it is applied on a piece of lint. It removes the pain *in an hour;* and generally prevents suppuration, even when the cutis has been scorched. It may be prepared extempore by shaking half an ounce of creosote in a pint of water. About 10 per

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* That most unscientific misnomer *Æther Sulphuricus* has disappeared from the U. S. Pharmacopœia, giving place to *Æther* (or *Ether*) *Fortior.*

cent. will be taken up, the remainder subsiding to the bottom of the vessel. Dilute as above mentioned.

3. The *Fluid Extracts* of the new U. S. Pharmacopœia have been prepared with great care and ingenuity, and of such strength that one minim is equal in effect to one grain of the substance—or rather that it contains an equal quantity of the active principle of the drug: for twenty minims of the Extr. Fl. Ipecacuanhæ, for instance, are said to produce a speedier and otherwise more satisfactory result than twenty grains of the Pulv. Ipecac. In making these fluid extracts, the menstrua have been varied so as to fulfil the two indications—complete extraction of the active principle of the drug, and regulation of the strength. In one respect, certainly, the fluid are superior to the solid extracts. *Heat* is not used in their preparation. This is, probably, the principal reason of the fact that the fluid extracts of conium and ergot far excel in strength, permanence and certainly the solid extracts or the primary substances. In the latter case, the substance loses its power altogether in two years, while the fluid extract retains its virtue for four years *at least.* The menstruum in these two instances is Acetic Acid.

There is one exception to the rule. The fluid extract of Calisaya is, relatively, of half strength only. An Extr. Fl. Calisayæ Aromaticum has been much used in Military practice, and is coming into favor with Civilian physicians. It resembles Huxham's Tincture,—Calisaya bark being substituted for red. From twelve minims to a drachm of either fluid extract, taken in a glass of sherry ten minutes before dinner, is, Dr. S. says, a most valuable tonic.

4. The *Sarsaparilla* of the New York market is, according to the same authority, worthless. It contains nothing but starch. The only valuable root comes from the Rio Negro and some other branches of the Amazon and is, almost entirely, sent to Spain; where a higher price is paid for it than it would fetch in New York. It is *four times* as expensive as the common sarsaparilla of commerce.*

5. *Vegetable medicines* should be, whenever practicable, prepared from the *seed* of the plant. Seed can be obtained only when the latter has reached maturity,—roots, at any

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* What is the therapeutical value of "country sarsaparilla?"

period of its growth. Sarsaparilla, taraxacum and other roots are absolutely inert when gathered at improper seasons.

6. The *Sarucena Purpurea*, said to have the property of aborting variola, was weighed in the balance of the New York County Medical Society, (which appointed a Committee for the investigation of the subject), and found wanting. The drug, thus disowned in the country of its birth, has been more kindly received in England. At the time that the examination into its claims to supersede vaccination was proceeding in New York, cases of its successful employment were being reported in the *Lancet.*

7. *Acetate of Potash as a diuretic.*—This drug is a favorite diuretic in the practice of Dr. Alonzo Clarke, Professor of Practice of Medicine in the College of Physicians and Surgeons, of whom we shall have to speak again. He exhibits it to the amount of ℥ss. in the day; beginning with ʒ ii doses and disguising its disagreeable taste by the addition of Acetic Acid.

8. *Chloride of Ammonium.*—On the 1st February I heard a paper read before the New York County Medical Society on this drug, to which the author attributed extraordinary potency in the treatment of many and various diseases. He began with "Watson's Face-Ache" for the cure of which this drug is most valuable—but he did not seem to me to mention distinctly that Watson recommends the "muriate of ammonia" in half drachm doses, for the affection he describes. My own experience coincides with theirs.

German physicians, (the author of the paper was German), have long been in the habit of using the chloride of ammonium in many other cases: but I was not prepared to hear so enthusiastic a panegyric on its virtues as this paper amounted to. The author stated that it was powerful to cure other neuralgiæ, intermittent fever, croup, bronchitis, Asiatic cholera, &c. &c. He combines it with chlorate of potass, with which it is *not* incompatible. It "energises" the action of the letter salt, as well as of the nitrate, and of the iodide of potassium. To the above list of diseases to which chloride of ammonium is fatal, I should have added diphtheria—a disease, I may remark, in passing, not unknown in India—especially in those cases where the membrane tends towards the larynx. With regard to cholera, the author stated that several cases had occurred in one family under his care, the first of which, being treated "in the ordinary way," died—

the later, treated with the combination above mentioned, *recovered. Post hoc ergo, &c.* The effects of the medicine are, according to his representation, most wonderful in cases of croup.

The chloride of ammonium, which has a very nauseous taste, may be given to an adult in half drachm doses. Two ounces, once taken at a dose by mistake, produced no worse result than slight colic and some watery stools. Finally, the effects of the drug are promoted by the exhibition of a preliminary dose of calomel.

Although it is improbable that this medicine possesses all the powers attributed to it by the author of the paper, and by our German brethren, I think that it deserves more attention than it has hitherto received, and venture to recommend it to the notice of the profession in this country.

9. *Persulphate of Iron in Aneurysm.** A man wounded the common carotid with a pen-knife, the result being diffused traumatic aneurysm. The position of the wound in the artery not being known, both the common carotid and the internal were tied. No effect was produced upon the aneurysm by the operation, and after death the wound was found to be more than an inch below the bifurcation of the artery. During the progress of the case a solution of persulphate of iron was twice injected into the tumour—25 minims on the first occasion, and 40 on the second. The result was the formation of two firm clots. The plan seems worthy of trial in other cases.

10. *Lead-poisoning* is believed by New York physicians to be incapable of resisting two specific remedies—iodide of potassium and croton oil. The effect of the former upon the paralysis, which is the most prominent feature of the disease, was carefully investigated in the New York Hospital. The conclusion at which the physicians arrived was decisive as to its efficacy—which was explained in the ordinary way, by the formation of the inert iodide of lead. One of the medical staff of the Bellevue Hospital assured me of the invariable success which has attended the iodide of potassium treatment in that immense establishment. The specific effect of croton oil upon the abdominal pains, asserted by Dr. Bartelott, is not so well established.

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* I prefer this to the common orthography. It is not an innovation, and it is more correct.

11. "*Remarkable Case of Deception.* A Woman professing to secrete nothing but Charcoal and Stones for a number of years, all the natural functions being arrested, and the Deception Unmasked. By Lewis A. Sayre, M.D., of New York." Such is the title-page of a short pamphlet,* four pages and a half octavo, of which the author gave me a copy. A condensed account of the case will, I think, be amusing; though I can scarcely claim credit for it as instructive. I shall have occasion to mention Dr. Sayre more than once again in the course of these Notes. He is one of the leading practitioners of New York.

This remarkable woman made her *début* in 1861. A Dr. A. G. Purdy brought her case before the Medical Society of the State of New York as one "of remarkable suppression of urine." In his report he states that "she has also undergone a strange transformation of her skin, on her face, left arm and left leg—they turning black like charcoal;" and that her former physician had *seen* her expectorate, while coughing, pieces resembling charcoal. So reported Dr. Purdy—whether deceiving or being deceived, I know not. He says, doubtfully, at the end of his article, "I cannot say that there is no deception in this case, but think the above statement substantially correct."

After a year's rehearsal in the country, Miss Perry and "her physician," one Dr. Perkins, felt themselves equal to an appearance on a wider stage; and in June 1862, "the charcoal woman" was an article of public exhibition in New York. This was an unfortunate step, in some respect, for the imposture was very quickly blown up there, by the shrewdness and perseverance of Dr. Sayre. The result of the explosion, however, was not so completely satisfactory as honest people would wish; for after two weeks' detention in hospital, Miss Perry returned to her native country, (Oneida), and to her former ingenious method of earning a livelihood. Having heard that she was under the charge of a "Dr." Fitch, and a committee of ladies who were "carefully narrating all the marvellous phenomena which were being exhibited," Dr. Sayre felt it his duty, in the cause of truth and honesty, to read, print, and circulate the account of his discovery of the gross imposture which was being palmed off upon the public.

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* A re-print from "Transactions of the Medical Society of the State of New York," 1863.

On the 26th June 1862, he was requested by a clergyman of the city to see the Charcoal Woman. Dr. Perkins entertained the visitor with a detailed account of the remarkable phenomena which she had presented during fourteen years. At various times during the last four years he had removed from his patient's vagina a vast number of pieces of charcoal, from one to three inches in length, and from half an inch to an inch in diameter; besides several pebbles of nearly the same size. Of the fact there could be no doubt, for —there were the pebbles and the charcoal in a big box.

But the mucous membrane of the vagina was not the only source of charcoal supply with which Miss Perry had been endowed. Dr. Perkins had "an ordinary prune jar nearly full of smaller specimens of charcoal" about half an inch in length and a quarter in breadth, which his highly carbonized patient had expectorated, "either by coughing or vomiting." These secretions were smoother than the vaginal products, and covered with a gum-like material. Lest there should be any mistake, all the stones and pieces of charcoal were labelled and numbered—the numbers referring to "a very large book" in which were recorded the history, date of passage, &c., &c., of each specimen, with great accuracy. Each entry was attested by *bonâ fide* signatures of highly respectable men—many of them lawyers, clergymen, judges, merchants—even physicians!

"This book" Dr. Perkins stated, with justifiable pride, "was the most remarkable work ever written. He was very anxious to ascertain whether any medical man could give a proper solution of the case, as up to the present time it had baffled the skill of all who examined it." The lady had been under his personal supervision for the last four years. She had been most carefully watched during the whole period by himself or others, and *had not passed one drop of urine or one particle of fœces.* She had neither bladder nor rectum, but got on very well without either, inasmuch as "all she ate or drank either exuded from her skin, in the form of thick blood, which dried in scales, like coal, on her face and the left side of her body, or was removed from the vagina every few weeks," the process of delivery being a very painful one. Sometimes the carbonaceous scales would fall off, leaving the skin healthy; but they would reform in a few weeks or months.

After this preliminary statement of the remarkable case,

ed if cut loose from its attachment to the hair and to
and which bound the patient's forehead. An attempt
nfirm, by handling, the impression derived from inspec-
elicited an attack of hysterical convulsions and low
ering complaints, as if of pain. The left arm was simi-
encased, from just below the shoulder to the wrist. A
urns of bandage, which Dr. Perkins would not allow to be
ved, concealed the termination of the casing above and
r. The left leg and foot were covered from just above
nee with the same material, but the bending of the foot
cracked the casing, over the instep; and the natural
was visible through the aperture. Into this fissure, Dr.
e quietly put his scissors, having diverted the attention
e two impostors and the other persons present, and cut
little bit of the "secretion." Immediately upon leav-
he house he examined his prize, in the presence of the
yman and the patient's niece; and found the casing to
st of cotton and gum covered with some black substance.
were, of course, at once convinced of the deception
h had been practised.

er other relatives, however, still believed in her. In
of the excised piece of casing, they were convinced that
Sayre was mistaken. Fortunately their scepticism and
ility combined took the form of "positively insisting"
he should see Miss Perry again on the following day, in
any with some of the leading physicians and surgeons
e city, who were to meet in consultation upon the case

fragments. The leg and arm were unchanged. The woman was writhing in apparent agony; being, as the doctor explained, about to pass a piece of the coal. He added that the assembled visitors were fortunate in having come just in time to witness a confirmation of his previous statements. A number of the gentlemen present examined the vagina and found that there certainly was some hard substance in it. This Dr. Perkins removed—a piece of coal or charcoal like his other specimens. He then, with almost incredible impudence, requested the opinions of the spectators, severally, as to the explanation of the wonderful phenomenon!

When Dr. Sayre's turn to speak came, he expressed himself with great freedom: to the effect that "the whole affair was a gross deception, that the doctor was a swindling rascal, and that he knew it; that it was a case of nymphomania, and that he had taken advantage of the woman's infirmity; and that the cuticle on the face and extremities was of artificial production," in proof of which he exhibited the specimen he had cut out. Being requested to complete the work he had begun, he, with the assistance of the gentlemen present, "barked" the patient, of her artificial integument, which was found to be cotton cloth and gum, overlaid with some black substance, which appeared to be petroleum, and a pot of which was discovered in the doctor's box.

This exposure of the imposture ought, one should suppose, to have been sufficient. All present were perfectly satisfied of its completeness. It will scarcely be believed that some of the relatives and friends of the unhappy woman called on Dr. Sayre next day, to persuade him that he had been mistaken, and to request that he would meet Dr. Mott, for a more thorough investigation of the case! Stipulating that he was to be allowed to examine the patient under chloroform and without interference, he consented: and the second consultation took place. Dr. Perkins expressed intense indignation at the insults which Dr. Sayre had offered on the previous day, and had no doubt that the latter would find that more charcoal had been secreted—in which case he expected that the other, convinced of his error, would apologize!

The patient refusing to inhale chloroform, Dr. Sayre examined the vagina without its aid, and found it lightly packed with pieces of charcoal, which were removed with some difficulty, the parts being exceedingly dry and contracted. Dr. Mott then asked again whether the woman had any rectum. Dr. Perkins said no—and Dr. Sayre's finger simultaneously passed into the missing gut. The catheter was then passed into the bladder, (which, it will be remembered, was represented as non-existent), and an ounce of urine withdrawn. This finally convinced the relatives and friends that they had been humbugged. "The doctor" with admirable presence of mind, coolly asked if the secretion of so small a quantity of urine during a period of four years was not in itself a very remarkable phenomenon, rendering the case one of most wonderful interest? The patient's friends could not regard the matter in this light. They were exceedingly angry; and threatening to have Dr. Perkins arrested as an impostor, he suddenly left the room, and the house—carrying with him his box of specimens and his remarkable book.

The patient was removed to Bellevue Hospital and placed under strict surveillance. All communication with her friends or other sources of undue carbonaceous supply was cut off, and a vegetable diet ordered. Next morning, she stated that she had passed no water since admission. The floor was damp, "as though a bowl of water had been spilled" for a considerable distance round her bed; and a neighbouring patient had observed her, early in the night, sliding towards the edge of the bed, and while lying in that position urinating upon the floor. She professed to have no desire to make water; but a catheter was inserted, (very much against her will,) and nearly a quart of urine withdrawn.

At Dr. Sayre's next visit, the bladder was again distended; and the catheter being again produced, she became very much excited, snatched the instrument, and introduced it herself with the most practised dexterity! A dose of castor-oil operated in the usual way, and during the fortnight she remained in the hospital all the natural functions were properly performed. Her appetite and general health were good. Shortly before she was discharged, she asked the house-surgeon "what he would think if this singular disease should return a few weeks after she got home?" As was stated in the beginning of this Note, the "singular disease *did* return: and its recurrence led to the publication of the case by Dr. Sayre.

12. *Atrophy of the Uterus.*—This cannot, I suppose, be a very rare instance of "arrest of development;" for the Physician to the Woman's Hospital, (Dr. Thomas, who is also Professor Adjunct of Midwifery at one of the principal Medical

schools of New York) mentioned three cases which he had seen within a recent period. The first of these came to the hospital one day, when I was there, to consult Dr. T. upon her sterility. She was then nineteen, and had been married *five years* without any symptom of pregnancy. Her husband had been sixteen at the time of his marriage. The girl had menstruated for a year previous, and no cause of sterility was apparent *except* atrophy of the uterus, which examination with the speculum at once made evident.

On another occasion I saw a case in which more serious consequences appeared to be dependent upon the same cause. A girl, aged 16, was brought to the hospital for advice for epileptic fits, from which she had been suffering for three years. The external signs of puberty were pretty fully developed. Menstruation had taken place a few days previously, for the first time. Dr. T. having, a short time before, met with a case in which epileptic convulsions had been due to the advent of menstruation without adequate development of the uterus, suspected a similar cause in the present instance. Examination showed that the uterus was not larger than that of a girl of eight years old. The treatment successfully adopted in the other case was applied in this. The uterus was developed by the introduction of a sponge-tent three times a week. This dilatation and consequent growth of the organ had completely cured the epileptic affection in the former instance. The latter case I saw, again, more than a month after her admission and subjection to the treatment described. Not one fit had occurred; though previously a week had never passed without one. It would be absurd to build any superstructure upon two cases only; but they may convey a useful hint in a doubtful diagnosis.

13. *Vaginismus* affords an illustration of the danger of an induction founded on an insufficient number of instances, to which I alluded in the last Note. Dr. Sims published a paper upon this excessive and painful contraction of the vagina, induced by the slightest touch, and rendering sexual intercourse impossible,—in one case which had come under his observation the patient had been married *forty years* without coition. He had discovered, as he supposed, that this disease was invariably the effect of a morbid condition of the nerves of the hymen; and he had treated it sucessfully, in every instance, by removing the membrane and its attachments all round in a belt. Since the publication of the

paper, however, cases had occurred, both in his own practice and in Dr. Emmett's, in which vaginismus was not due to this cause, but was secondary to uterine disease.

14. *Tracheotomy in croup.* At a meeting of the New York Pathological Society, on the 13th January 1864, Dr. Sayre brought forward a case of croup in which he had successfully performed tracheotomy, death resulting from a singular accident. The tubes having become somewhat obstructed the child's father drew out the inner one, to free it. Violent hæmorrhage was the result, and the patient was dead before a surgeon could reach the house. During the operation, Dr. Sayre had observed an unusually large vein lying across the trachea, immediately above the point where the tube had been inserted. In fact, it lay across the fenestra of the outer tube. The external coat of the vessel ulcerated away, allowing the internal to sink through both fenestræ (coinciding in position), and to project into and partially obstruct the inner tube. The hasty withdrawal of the latter sliced off the projection and fatal hæmorrhage ensued. The lesson which Dr. Sayre deduced from this accident was to have no fenestra in the inner tube, and to change the position of the outer one. The only object of having a fenestra at all is to allow the convalescent patient to use his voice. For this purpose the inner tube may be withdrawn at any time, and air pass into the larynx through the fenestræ of the outer. It was suggested at this meeting that the use of a tube at all is worse than unnecessary—that it irritates, and even produces bronchitis. There is no ground, I think, for this supposition.

I have mentioned this case, less on account of its intrinsic importance, than as an introduction to an account of Dr. Sayre's practice in those cases of croup which obviously require tracheotomy. He had, at the time I heard him speak on the subject, operated in 8 cases, of which 5, *besides* the one above-mentioned, (which was on the way to recovery when death from another cause intervened), were completely successful. This very high measure of success he attributes to the after treatment. The child is kept in a room, the temperature of which is maintained at from 85° to 90° (F.); and the atmosphere of which is kept *saturated with moisture*, by means of a vessel of water placed on "the stove." The membrane of croup is nearly soluble in hot water, as may be seen from the ease with which the tubes may be cleaned and cleared in hot water, while the same process is most difficult with cold. Hence it would seem that not only is watery vapour at a high temperature almost essential to the successful treatment of cases of croup after tracheotomy, but that the necessity for the operation may be altogether obviated by keeping the patient in such an atmosphere as I have described. In the United States this is easily done, stoves being used almost universally by the classes most liable to croup, and very generally by others. In England this method of treatment would be less easy, but practicable. In this country it would be more difficult of application.

At a Meeting of the New York County Medical Society held subsequently, at which, however, I was not able to attend, a gentleman (whose name, I think, was Morriss) read a report of two cases of "membranous" croup which had been successfully treated, without operation, in the manner indicated. The reporter claimed the merit of having introduced the practice into the United States; conceding the credit of original discovery to "Dr. Budd of Bristol."

15. *Beef-tea.* At Dr. Thomas's "Clinique" at the College of Physicians and Surgeons, on the 4th December 1863, one of the cases on which the Professor lectured with great ability was a girl of 19, suffering under well-marked chlorosis—evinced by paleness of the mucous surfaces, diablosis, &c. &c. The treatment recommended was gr. iii.; of "perhydrated iron" with gr. ¼ of extract (watery or alcoholic) of nux vomica, three times a day—a combination which Dr. T. considers the best medicine for those cases of chlorosis in which the nervous system is affected as well as the hæmal. He further ordered one pint of "beef-tea" to be drunk at each meal.*

With reference to this last item he remarked that an analysis of some ordinary "strong beef-tea" had given 95 per cent. of water. He related Majendies' experiment, in which one dog was fed on "beef-tea" and another on the shreds of meat from which the broth had been made, from which all nutritious matter was supposed to have been removed by long boiling, and which are generally thrown away. The latter animal grew fat; the former died of starvation. In conclusion he gave the following recipe for the preparation of *real* beef-tea; by a process which imitates that of digestion, and gives a most nutritious and easily digested aliment.

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* Cod-liver oil is a most valuable nutrient, but apt to disagree in cases of chlorosis.

Mince one pound of beef, and bray in a stone mortar with twelve minims of strong muriatic acid. Add about a pint and a half of *cold* water; boil slowly for half an hour; then give one rapid boil, and strain through a piece of ordinary cloth. Almost the whole contents of the saucepan ought to pass through the strainer.

16. *Infants' Milk.* From the same lecturer, on another occasion, I heard of the following curious experiment, which he had seen in Paris while studying there. He was discussing the folded position of the fœtus in utero; which he accounted for by the preponderant power of the flexor muscles, the fœtus being under the control of organic nervous centres only; as in cases of paralysis when the control of the will is lost, a similar action of the flexors is observable. He then mentioned that either Boerhaave or Van Swieten accounts for the attitude of the fœtal head—bent downwards over the chest—by supposing that during intra-uterine life the embryo sucks its own breasts: and, to show that this might not be altogether an unprofitable employment, related the Paris experiment, which was new to me.

Ten healthy infants were selected, between the 5th and 9th days after birth, (about the time of separation of the remains of the funis), when the secretion of the mammary glands is most abundant. One of these was *wet-nursed* by the other nine for a week; and not till after a week did it show symptoms of insufficiency of food, when it was restored to its mother. Two of the nine nurses suffered subsequently from mammary abscess.

While I am on this subject, the following facts appear to me not unworthy of being "re-published for information." They are taken from one of the notes to Professor Bedford's valuable work on Obstetrics.

Of 65 infants examined from 9th to 10th day, in one only was the mammary secretion not observed. Increased volume of the glands and secretion usually continue, in a certain degree, until the 20th day. Out of 165 infants, from 12 to 21 days old, 149 exhibited the lacteal secretion in variable quantity. At the end of a month, it is extremely rare for the secretion not to have ceased altogether. In four instances, M. Gubler observed it to continue for two months.

This milk is more alkaline than that of the adult woman and of other animals.

The following analyses made by M. Querenne show the curious fact that the milk of the infant and that of the *ass* are very much alike in composition :—

	Woman's.	Infant's.	Ass.
Butter	2·60	1·40	1·40
Casein	3·90	2·80	1·70
Sugar and extractive matter	4·90	6·40	6·40
Water	88·60	89·40	90·50

17. *To imitate human milk,* in the artificial feeding of infants, ought to be important. In the *American Journal of the Sciences* for July 1858, a paper appeared in which this problem was examined by Dr. Cumming. The following results are given in a note by Professor Bedford :—

	Cow's milk.	Human milk.*
Butter	38·59	20·76
Casein	40·75	14·34
Sugar	53·97	75·02
Water	866·69	889·88

In cow's milk the butter is to the casein as 100 : 105; in human milk as 100: 70. If, then, by dilution of cow's milk, we reduce the amount of butter to 20·76 parts in 1,000, we shall have 50 per cent. more casein in the mixture than there is in human milk. If, by further dilution, we reduce the casein to the proportion of 14·34 in 1,000, we shall have only 13·58 parts of butter, or less than two-thirds of the proper proportion. *Ergo,* diluting simply will not make cow's milk fit for babies.

If we leave ordinary cow's milk at rest for four or five hours, and then remove and examine the upper third, we find in it 50 per cent. more butter than it contained before. In round numbers, its butter is no longer to its casein in the proportion of 100 : 105, but as 150 : 105, or as 100 : 70. If, then, by dilution of this upper third we reduce the butter to 20·76 in 1,000, we have 14·34 of casein, as in human

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*It will be noticed that this analysis of the milk of the adult human female differs considerably from that given in Note 16. As each table was the work of one person, and the object in view in both cases was a *comparison* of results of analyses of different substances, made at the same time, the discrepancy between the proportions of the same substance in the two tables is comparatively unimportant.

k. [By adding two parts of water to the upper stratum, reduce the proportion of butter from 58 per 1,000 to 20, the casein from 41 to 14, which are the amounts uired.]

8. *Epigram.* The following lines were introduced into Valedictory Address, which formed part of the proceeds at the spring commencement of the College of Physis and Surgeons, last March. Neither the epigram nor idea it embodies are new; but I had not heard the ner before:—

God and the Doctor all mankind adore—
When danger threatens—not an hour before.
The danger past, both are alike requited;
God is forgotten, and the Doctor slighted!

.9. *Oily Blood.* At a Meeting of the New York Pathologi- Society in December 1863, a specimen of oily blood was ibited. 25 per cent. of the fluid contents of the veins s oil. The man had sustained a comminuted fracture of leg. He refused to allow immediate amputation. When operation was performed afterwards gangrene set in, and died. The superficial veins contained a considerable ntity of *gas*. The liver and kidneys were waxy. It s suggested that the case was one of nekrhæmia from hock;" the blood being deficient in alkali to saponify the ty part of its constituents.

20. *Cancerous Heart.* At a Meeting of a private Medical ciety, or "Union," Dr. Finnell—one of the visiting Surns of St. Vincent's Hospital—exhibited a remarkable ecimen of scirrhous heart. The morbid deposit occupied rt of the substance of the left ventricle; the origin and rt of the course of the large arteries were, with the trachea, rrounded by a mass of scirrhus. It was found also in lungs, liver, ovaries and kidneys, abundantly. There s none in the mammæ which were well developed. The tient had been a healthy-looking German girl, three nths from Europe, employed as waitress in a "Lager er Saloon," where she was worked hard and fed badly, tting little food, it was said, except "lager bier" *ad libitum*, is being one of the thinnest potations known. Notwithnding these unfavorable circumstances, the girl appeared good condition.

ART. III.—*Special Report as to the relative effects of Hill and Plains Stations on the Sanitary welfare of the Soldiers, 74th Highlanders.* By Surgeon-Major JAMES MACBETH, M.D., H. M. 74th Highlanders.

(Communicated by Government.)

1. As this report, should it be accepted, will certainly be thoroughly analysed as to the correctness of its general purport, tables, &c., and statements, it is absolutely necessary for me to offer in preamble a brief explanation to account for my having undertaken the task.

2. The Senior Medical Officer at Bellary in the Ceded Districts, informed me that he was deputed by the Principal Inspector-General of the Madras Presidency to enquire whether or not I could command such records as would enable me to give a Medical history of the Corps. I had no hesitation in replying, "certainly." I was then asked to undertake the work; I hesitated, but only because my Regiment was under orders for Home. On being informed that the Principal Inspector-General was pressed for such a report to be laid before the Secretary of State for India, I at once assented, never, however, doubting that the utmost latitude, to the extent of the time I might remain in India, would have been accorded me for so grave and laborious an undertaking. Shortly afterwards I discovered that I was expected to furnish the report at once; this I was compelled, respectfully, to decline, and appealed through my Commanding Officer to His Excellency the Commander-in-Chief who was graciously pleased to admit the reasonableness of my request for time. Still great pressure has been put on me. Any one who takes the trouble to peruse the report cannot fail to see that its compilation, the construction of the tables, reading up old reports, references, correspondence, and last, and most perplexing of all, discovering the precise circumstances recorded regarding every man who belonged to the Corps from the day it landed in India, up to the date of our embarkation for Home, was a task of no ordinary difficulty; and when, added to this, I was obliged to do my work on the march, moving every day to perform my duties and go on in advance with the sick, and complete annual returns and other documents, I feel that I will greatly disarm severe criticism and insure consideration, which is all I desire. I should at any time have assumed the task with diffidence,

but when so great pressure was made on me as to time, I confess I proceeded to furnish it with no little reluctance, only, however, because I fear that situated as I am, without time for reference, quiet, or any other convenience, I shall not be able to do credit either to the subject or myself. Having said so much, I can only crave indulgence for all my deficiencies and shortcomings.

3. Before entering upon the Indian career of the 74th Highlanders, I must premise by recording that the Head Quarters left England on the 14th March 1851, landed at the Cape on the 11th May 1851, were engaged for three years on active service in Africa during the late Kaffir War in the years 1851, 52, 53, till they embarked for India on the 20th November 1853. While on active service, though the climate is reputed to be wonderfully healthy, and well adapted for English, Irish, and Scotch soldiers, it is certain that they were exposed to a good deal of hardship and vicissitudes of temperature during the twenty-four hours, as well as scarcity of proper clothing, irregularity of diet, and generally a total want of vegetables, often dieted on biscuit and salt provisions alone; this, during the greater portion of their voyage towards India, was of course continued to a certain extent. Shortly after the Head Quarters reached Madras (12th January 1854), they were encamped on the Esplanade, and they marched for Trichinopoly, where three Companies were stationed for twelve months; when five days after, two Companies were sent to Jackatalla in the Neilgherry range; after three months, three Companies more, with Head Quarters, reached that station on the 30th March 1854; in a month after that the remainder, leaving the whole Corps there till the 14th February 1855, when the Left Wing was ordered to Cannanore, and six months subsequently two Companies to join it, leaving at Head Quarters only 393 men.

4. To proceed with this history, the Depôt Companies reached Madras in the month of January 1854, and embarked for Negapatam on the 19th January. Most unfortunately Cholera broke out amongst them, and before and after landing, previous to their arrival at Trichinopoly no less than 30 men, 5 women and 6 children fell victims to this fatal disease. I may here state that this unfortunate Detachment while en route to Jackatalla were again attacked by the disease, two marches from the foot of the Ghat, and lost 9 men, 2 women and 4 children.

5. The two first Companies occupied some temporary huts, previously the accommodation provided for two Companies of H. M.'s 84th Regiment, and temporary bamboo and mud sheds low down on the edge of a scarped hill running up behind them, were hurriedly got up for the accommodation of the men; low, unventilated, crowded, without even fire places, badly fitting doors, and few windows, each with four panes of glass, the water percolating and naturally rising to the surface through the low ground; three wooden boards, miscalled cots, without mattresses and with insufficient covering, was not the result certain? and miserably was it realized. The previous history will have prepared the mind for the fact that there was a highly scorbutic constitutional tendency amongst the men who had served at the Cape, while of the Volunteers who joined, many had spent years in the relaxing climate of the Western Coast with H. M.'s 25th and 94th Regiments, the latter sent up promiscuously, without reference to their state of health, antecedents, or habits of body. A virulent and fatal form of dysentery shortly broke out, and between 25 and 30 were admitted, and caused no less than 11 casualties, the majority of the dysenteric cases having originated in the huts with mud floors, comparatively few came from the old and more commodious ones on the spur of a sloping hill, and many of them having wooden flooring, all the others bricked, showing that even so slight precautions had prevented disease. I earnestly pointed out the defects in ventilation and utter want of drainage. The last erected temporary ranges were built in the face of and scraped out low down on the side of a hill—the floor a mud one, the water of course penetrated through the soil, reached the surface, and was naturally attracted into and absorbed by the soil.

6. In course of this report I hope I shall be able to prove by the extracts from reports and other official documents regarding the sanitary history of the 74th Highlanders since their arrival in the Madras Presidency—that my opinions are unprejudiced, and the result of experience coupled with long and mature consideration. I shall quote freely from documents relating to all phases and periods of the history of the Corps, beginning with their landing and ending with their embarkation. The tables will shew that I have, after much labor and difficulty, succeeded in faithfully accounting for every man, and shewn what has become of each, and the remainder will make up the deficit, and thus,

with those accounted for and remaining, the grand totals will be found totally, few who have not tried the experiment will believe how difficult it was to do so.

A short analysis of the tables with explanatory remarks and references.

7. In this portion of the report I shall endeavour to shew how impossible it is that valuable or reliable local statistics can be deduced from the residence of any portion or portions of the 74th Highlanders under the somewhat peculiar circumstances in which parts of the Corps have at different periods been located. For the first four or five years of our Indian Service, the Regiment was so entirely disintegrated,—*vide* tables and quotations, that no possible opinions can be arrived at ,shewing the relative sanitary effects on the health of the men generally at Jackatalla, useful for local sanitary deductions; at Bellary even, when the Left Wing, all the Detachments, different batches of recruits joined, and the Corps was once more together in its integrity, it will be at once seen from the tables what difficult and incongruous circumstances and influences must be dealt with before any reliable local facts can be arrived at as to the effects the station may have exerted on the sanitary state of the Corps; with the help of extracts from reports, and the tables appended, I shall, I hope, be able to make this plain enough, and finally to shew, that individually and collectively, the effect of the climate and locality of Jackatalla was in every phase, save one, conducive to the sanitary benefit of the corps. The exception I alluded to is, when men belonging to the Regiment arrived at that station in such a state or habit of body as involved the almost certainty that latent disease would be matured and developed, which local influences, such as have been enumerated and existed, would most probably superinduce, thus causing exaggerated forms of zymotic diseases, which they did ! ! ! Hence the mortality uninfluenced either by climate or situation, but clearly owing to the constitutional state of the individuals and the circumstances affecting them for evil—with this I leave Jackatalla for the present.

8. With reference to our stay at Bellary for a period of over six years, a great many important matters must be weighed; when the Regiment met, men of all ages, constitutions, services in different climates for various periods, were

brought together. Let Bellary be the healthiest station in the world, and it is a healthy station, one of two things must happen, either a large number of men must be discharged or invalided, more shortly get rid of, or from the peculiar heat and arid nature of the climate under the circumstances named, an enormous sick list, and not remotely a large mortality be the result. The tables will shew that the alternative of removing the men from such influences was adopted and mortality avoided, but a large proportion of invalids and discharged men are shewn. At Jackatalla no such choice was left; zymotic diseases and a grave mortality was the result, little or no invaliding comparatively, but the returns and tables will demonstrate that at Bellary, after the first clearing out, so to speak, there was a decided diminution both of local sickness and the necessity for invaliding home. This state of matters lasted for a period when extraneous causes, together with the extreme and persistent heat of the climate, with other concomitant influences, resulted in producing a decided effect on the constitutions of a considerable number of men, when discharge and invaliding again became necessary. *Vide* extract from reports and refer to tables.

9. Now a few remarks on the terrible results of Syphilitic diseases, the cause of more discharges, invaliding, and every other evil destructive to the constitution of the men and the interests of the Service, when I have done.

10. I read lately with much interest the remarks of an eminent Medical Officer connected with Netley Abbey at home, in which most ably and justly he sets forth this crying evil, remarking “in situation are the terrible results so conspicuously evident as here, where they are traceable in every fibre and tissue.” Without his opportunities I too have observed the miserable results, not only in the individual, but their unfortunate offspring even unto the third generation. This, coupled with the scrofulous material, unfortunately admitted into the Service, causes an alarming proportion of the diseases, invaliding, and death in all climates, and so it will continue till Hygienic influences and legislative wisdom combine to break down a pseudo morality which, admitting the evils of uncontrolled and unlegislated-for prostitution, will not admit the necessity for the real mercy of authorized and governed legislative interference. In Bengal this was, to a certain extent, some ten

years ago recognized. I was witness to the beneficial results morally and physically to both parties concerned, and submit that no religious or moral rule was infringed. Whenever I have had opportunity or influence, I have advocated this, and however limited the attempt when made, I always found it result in good.

11. Having given the gross results of yearly mortality, invaliding, &c., it becomes necessary again to advert to tables, extracts, &c., and request attention to the controlling causes over such results.

12. Then as to mortality, it will be evident on the face of this that it is mainly attributable to two causes, the attack of Dysentery at Jackatalla and the mortality in certain unfortunate marches; those two events alone giving of the total deaths during the ten years under notice 104, the total being from all causes 275.

13. Next in order let us glance at the amount of invaliding, when it will be seen that at Jackatalla it was comparatively trifling, though mortality was greater; the invaliding was very considerable at Bellary, and this is easily accounted for, when it is recollected that all the inauspicious influences were concentrated at one point. The men from the Western Coast anemic and cachectic, the men who had escaped from cholera and other zymotic diseases in the unfortunate marches, and a very indifferent batch of recruits which joined in November 1860, of whom a reference to table R. will shew that they had defects which ought to have prevented their admission into the Service; it is therefore no more just to refer the increased sickness and number of invalids to the climate or locality of Bellary, than it is to attribute the mortality from zymotic diseases to Jackatalla.

14. Having given tabular statements of every form, I thought it might prove useful to assist those who are anxious to arrive at just conclusions as to the relative value of Military stations on the hills and plains on the health, efficiency, longevity, and actual constitutional wear and tear accruing. Before proceeding with references to the comparative results shewn by the various tables to affect the different sanitary questions under consideration, I shall endeavour to give a resumé of recorded facts, copiously quoted from existing official documents, as they occurred at the places and periods set forth, which I submit is the only

reliable mode of arriving at just conclusions, and beg to offer my reasons for feeling strongly on this point.

15. I am well aware of the infinite value of accurate statistical tables, and have carefully studied them, more particularly as they happened to relate to different localities where I was in Medical and Surgical practice at the periods the tables referred to; and it always struck me how much more generally useful and interesting they would have been accompanied by a short history of the state of affairs which produced or effected results duly set forth in figures. Such statements ought to be made out by experienced Medical Sanitary Officers located at the different stations. I confidently affirm that in my own personal experience, tables affecting to shew the relative mortality, amount of zymotic disease, &c., could only lead to erroneous deductions as to the sanitary advantages or otherwise of places tabularly dealt with without explanatory notes. With a view to illustrate my meaning, I shall instance Jackatalla, or Wellington, on the Neilgherries, having perused tables actually making it out an unhealthy station with a great amount of fever and acute zymotic diseases of local origin. Now, I only ask any unprejudiced person who has done me the favor to peruse this report in its various parts, particularly the quotations treating of the health of the 74th Highlanders and other European Troops under my medical care at different periods, whilst stationed at Jackatalla, if facts and tables accord? I submit that it would be precisely as fair to assume that a locality was unhealthy because mortality occurred or subsequent disease ensued from a flood, fire, or an earthquake, as to come to conclusions regarding the local value of Jackatalla from dry statistical results. With reference to the 74th Highlanders, let the extracts from the various reports be read, then mark and follow the results and facts as to the different causes which affected, not the locality, please to observe, but the individuals hurriedly and promiscuously set down there. It will be then evident to the most casual, nay, I think I may add, even a prejudiced observer, that dilatorily and tediously as improvements were effected, so steadily did the state of health improve, the mortality and the amount and severity of disease decrease, till finally there was little or none, save in cases where the causes previously alluded to involved a very gradual return to health, and in others forbade the hope of such a desirable result at all. To obviate the necessity for reference as much as in my

power, I shall recapitulate some of the causes why there was much sickness and mortality amongst the soldiers on first arrival.

1st.—The previous history and constituent parts of the Corps; 2nd, the scrofulous diathesis in the men from Africa; 3rd, the disastrous marches, when that dire scourge, cholera, from which those who did escape recovered with shattered and debilitated constitutional powers, broke out; 4th, the promiscuous manner in which men were permitted to volunteer from the 25th and 94th Regiments, and men who had seen much tropical service, mostly too in that, after a time, very relaxing climate, the Western Coast, without the slightest attention to their state of health, or the functional capabilities of important organs, they were sent up some six thousand feet above the level of the sea, many with torpid livers, others with diseased hearts or lungs, not a few actually suffering from various bowel affections, and none of them clothed with reference to such a climate.

16. Let us now arrive with them at Jackatalla. It has been shewn that they took possession of low, damp, unventilated huts, many of which were erected in the face of a hill near its bottom, no fire places, badly fitting doors and windows, three hard boards without a mattress, a quilt, and one *thin* blanket for bed and bedding; besides, they were very much overcrowded. Without going further, I think I have shewn a good many reasons for the probability of disease irrespective of locality. Thus, I submit, it has been proved that few of the men were in the best or most satisfactory circumstance to induce a hope of much sanitary benefit from the locality and climate, many of them being actually in such a state of body that the nature of the climate must mature and develop latent diseases, and to whom, consequently, it was the reverse of beneficial. Yet all this materially affects the question, as such men, when attacked, had infinitely less chance of recovering than if they were on the plains. If death ensued, where was the blame due? Surely not to the situation, but to the fact of their having unfortunately come to it. Another instance:—A Detachment of the 74th was attacked by cholera at the foot of the hills; three men arrived in a moribund state and died, nevertheless they are included in the tabular statement as adding to the local mortality. Was it so, and is such a statement reliable for people at a distance to form their

opinion from? That table does not add, either that there were eighty premonitory cases, who, if I knew any thing of cholera after twenty years' practice in India, involving me in four terrible epidemic attacks, would all, or nearly all, have been seized, taking the following circumstances into consideration:—There was a panic, the men were new to the country, eight (!!) comrades died rapidly amongst them in camp, the disease was violent, and had only just made its attack. All who know of cholera are aware that the first cases are always the most violent, yet mark the result in this instance; three of the eighty were seized after arrival, but not one died, the remainder recovered and were at duty in a few days, few were even admitted into hospital. In the plains, judging from other instances, would such have been the end? I fear not. This appears to me a true anecdote in favor of the locality which no table of figures can shew. Still treating of climate, I wish, however, to offer one or two further facts in proof that where tabular statements are without accompanying explanations, they almost certainly mislead, however carefully and accurately constructed. I heard that the Collector of the district had reported a violent outbreak of cholera which was carrying off large numbers of natives in the neighbourhood of a beautiful place named "Avalanche." I was doubtful about the correctness of the diagnosis, and willing to assist if in my power, but I fear a good deal influenced by a wish to remove my doubts and confirm my opinion, I posted horses, rode there, and stayed three days; distance out and back about 100 miles. I went amongst the people and relieved some to the best of my limited means. To achieve any real good or efficient amelioration of the most melancholy and distressing spectacle presented to me, the first step to be taken was the total removal of the people, a proceeding which I had neither the power to propose nor the means to carry out. As I surmised, the disease was not cholera, but an exaggerated form of acute diarrhœa, the only resemblance it bore to the former disease being extreme depression, purging, and death. I found the unfortunate natives of the race called Burghers, the present cultivators of the soil, though the more aristocratic looking Todahs are, I believe, the original possessors and lords of the soil, the former located near the foot of a high hill; their miserable hovels were holes in the ground, with two pieces of thatch, thus / \ , for a covering; they were actually in a marsh, lying in a puddle, with almost no bodily clothing, covered by a scanty cumbly, insufficient food of inferior quality, no medicine, no advice. Under such circumstances, what other result could there be save disease and death. But my object in relating the anecdote is, that as it was currently reported and generally believed that the fatality which occurred had resulted from cholera, possibly it may have been thus reported to the authorities; this too, then, may form an item in the tabular statement. One more instance—I have been permitted verbally, by an eminent Medical Officer of high rank to say, on his authority, that he placed no reliance whatever on the statistical sanitary tables of Ootacamund as at present conducted. The natives die without being seen by an educated medical man; the general idea of a native is, when sick, if the illness come in any other form than bowel complaint, that he is "tup lurza," or "fever-stricken," and such is the disease under which, as a rule, their deaths are reported and probably entered in tabular statistical returns. When I was at Ootacamund, chest complaints, as pneumonia, bronchitis, inflammatory sore throat, influenza, &c., were frequent.

17. Thus I understand this long established sanitary station has lately got the bad name of being feverish and rather unhealthy. I would add one other fact for consideration. From the continual influx and reflux of Europeans with retinues of native servants, a considerable number of the yearly native population of Ootacamund must be migratory. Is it not, therefore, more than probable, that the actual cases of fevers, and the deaths accruing, have been originated in the plains, or contracted in passing through the highly malarious jungles at the base of the Neilgherries? That attacks of common fever may and do originate on the hills, I do not for a moment wish to deny; but I am strongly of opinion, that amongst residents, who have been any length of time located, fevers of a remittent or intermittent type do not arise in individuals *never previously attacked.* I mention this, as it is not known how long the insidious poison, being once absorbed into the system, may be latent.

18. In constructing tabular statements for such a place as Ootacamund, there are several important points to be considered.

1st.—That the majority of European, and a great portion of the native population, is fluctuating, and most of the temporary residents are more or less in indifferent health.

2nd.—The European residents are principally retired Officers of a certain age, all of whom have seen more or less tropical service, with their families, together with discharged Soldiers on their pensions; yet, taking all such disadvantages into consideration, from what I know of it, I believe the permanent inhabitants, when they have after a time become accustomed to the climate and ascertained the proper mode of living and clothing themselves, soon become robust, active, healthy Europeans in all grades and classes, building for themselves fortunes and houses, and bringing up fine, handsome, healthy boys and girls, such as I have myself seen and admired there. Such is the proper mode of discovering the sanitary advantages of hill climates, and not tabular statements.

19. I will now, as His Excellency the Commander-in-Chief did me the honor to request, though with much diffidence, offer my own opinions and views, but in doing so shall endeavour to support them by giving the results of my various experiences in the Himalayas and on the Neilgherries, both while actively employed, and visiting the localities for pleasure. I wish to premise by offering my ideas of the reasons why hill stations have not hitherto generally produced such results as, *cæteris paribus*, every one had a right to expect; and then to submit for consideration a few suggestions, which my own experience lead me to believe, if adopted, might be productive of fortunate results, or at all events be beneficial in many instances. A perusal of the various extracts from periodical reports and returns will, I think, serve to prove that my opinions have not been hastily formed, but from conviction, and the occurrences and circumstances which came under my notice during the periods treated of. Considering the subject in relation to the health of the Soldiers, the requirements of the Service, and the general economy and advantages to the State, I think one of the first and most important is the bodily health of the Soldier on the plains, and, second, the circumstances and conditions under which he might be most beneficially removed to the hills. When a Regiment or other body of men are about to be sent to a hill climate, I should

have every Soldier carefully examined by a competent Medical Officer, experienced in Indian habits and diseases. I trust it will not be considered out of place or presumptuous in me to suggest the appointment of a specially selected Officer for this duty, one who has served principally in the tropics, continually with Europeans, having also much hill experience. Those whom he thought unfit to proceed to the hills at once to be placed under preparative treatment till deemed fit. I would then take clothing into consideration, and most strongly recommend that the whole of a Soldier's clothing, both inner and outer, be entirely woollen, as well as his socks, and his boots good European properly made ones; much of his comfort in wet weather depends on the latter article.

3rd.—As to the best season of the year, that must be greatly dependent on several contingencies, the distance to be traversed, mode of transit, &c., but at the latest, I think, at all events with reference to the Neilgherries, men ought to be sent up by the end of January. I have now brought the men, we will suppose, to the foot of the hills. The Coonoor Ghaut is at present the only safe one. Let some men and an Officer be sent up one day in advance, and send in their charge a warm suit of clothing for every man, to be put on immediately he reaches his barrack-room—there ought to be fires lighted in each room, and the men then get a comfortable breakfast. After this, with ordinary care, they will, I believe, do well, and repay the State by their vigour and efficiency whenever required for any service. A little care and surveillance is requisite at first. Men ought not to indulge their appetites too freely, as the bracing nature of the climate induces, because the functions of their organs will be very differently excited by the change, and both the secretions and excretions materially altered in form and quantity; as for instance, the act of micturition will be more frequent, and the secretion larger in quantity; the skin, save after exercise, will almost cease to act till the warm months ensue.

20. And now, supposing this or any other body of men about to proceed to the plains, I would again have them equally minutely inspected by the same experienced Officer, or another to act in conjunction with him, which would be

still better and more efficient. Nearly every thing would, of course, be reversed.

21. I should leave all men behind who are ailing, and not likely, as probably enough would happen in some cases, to be benefited by change to a warm climate, till pronounced well and fit for tropical service. I should recommend men to commence their march about the middle of October. On reaching the foot of the hill, let dry clothing only, of light texture, be ready. To carry out this plan efficiently, it would be necessary to have a certain amount of good accommodation provided under proper medical surveillance, either near Bangalore or Mysore, which done, a system of mutual exchanges, on communication between the sanitary inspecting Medical Officers on the hill and plains, might be effected at a trifling expense to the State, and with much convenience and advantage to both Medical men and Soldiers. I have frequently lamented the absence of such an institution in both situations.

To conclude this portion of the subject I have just a few words to say.

22. It always has been a project of mine, ever since I had any experience of Indian service, to see the greater portion of the European British Army located at least four thousand feet above the sea level, and not, as a rule, higher than six thousand. To carry this out, properly protected rendezvous should be erected, with provisions and the necessary munitions of war, as well as Arsenal and Ordinance supplies, garrisoned by a sufficient number of Europeans to defend it. Railway branches connecting them with the main line, the buildings, of course, erected at distances and localities to be decided on by Military, Political, and Strategetic Officers; in connection with such a system, I would have married quarters built at hill stations, with schools for the children, workshops for the boys, where they might be taught useful trades, and the girls all that was necessary to make good, useful, and industrious Soldiers' wives. When a man's turn came round for active service in the plains, he should leave his wife and family till his tour of duty was finished, when he would return with double enjoyment to find lusty boys and girls improved both in stature, intellect, and information. Under such a system, Pensioners would soon begin to locate on the hills instead of going home, and the style of Recruits, as well as the expense of obtaining

them, would be materially altered to the infinite benefit of all concerned. For the picture of a Soldier and his family located on the hills and in the plains—*vide* Extract in Annual Report for 1854-55.

To proceed with my subject; want of attention to many of the points I solicit consideration for, has been one great reason why hill stations have on several occasions been unjustly abused. I will revert to the state of the 29th Foot, with which distinguished Corps I had the honor to do duty for six months under their then Surgeon, (now Inspector-General) Gurney Taylor, during a violent epidemic attack of cholera in 1844-45. To the best of my recollection, over three hundred men were attacked at the station of Meerut, and a great many deaths occurred; the constitutions of a number of the men had been previously greatly tried by a severe form of fever which was prevalent at Ghazeepore during the rainy season of the year they were stationed there, which, coupled with the cholera, and added to the fact that after a few months' residence at Kussowlie, they were suddenly re-called to the plains for service, and bore the brunts of the severe battles during the Sutlej . campaign, resulted in their being attacked by a severe form of scorbutic diarrhœa on their return to Kussowlie; yet, notwithstanding all such disadvantages, climate carried them through, the mortality was small, and their Surgeon records, "many valuable lives and much treasure saved to the State."

24. I shall next advert to my residence for six months at Kussowlie, where I afforded gratuitous medical aid to all the residents. I was myself on leave; they were all up there in search of health, save one or two Government Officers and their dependents; there were some very severe cases, all benefited greatly; most had quite recovered health, spirits, appetite, and vigour, before I left.

25. My next experience was in being sent to form a Sanitary Depôt for the reception of Invalids from the different Regiments serving in the Punjab, but more especially at Peshawur, in the strength of a provision to be left at this station, named Murrie, in the Cashmere range. I built a house, served there nearly a year, but before my house was finished, my services were required at Kirkee in Bombay, to reach which I had to travel two thousand miles. To the best of my recollection there were above 100 Invalids. A Company of Guides, and between

thirty or forty Officers; the climate was delightful during the warm weather; it is very cold during the winter months, snow falls and lies for a time. The Invalids were then sent to the plains. The place for their residence was a long building, constructed of wood entirely; the Soldiers on arrival were about the most emaciated miserable men I ever saw together in India, every one of them had functional disease of some organ, many of several. I think only one death occurred in the case of a Soldier who arrived far gone in phthisis—not a single death occurred amongst the Officers or their families. No one would have recognized the men when they left for the plains.

26. My last experience was with my own Corps, on the Neilgherries. I shall allude more fully to this when referring to the statistical results in the different tables.

27. I shall now conclude by reiterating a hope that the shortcomings, either in my tables or report, will be set down to the peculiarly awkward circumstances under which the former were constructed, and the latter written; most of the information we were obliged to search for and extract from the hospital records, as what we could obtain from the orderly room regarding men who were no longer effective, was meagre in the extreme. I mean, of course, men discharged, invalided or died. In this undertaking I am greatly obliged to the zeal, intelligence, and active assistance afforded me by my two principal subordinates, Second Apothecary L. L. Dyce, and Assistant Apothecary J. Walker. I believe the tables to be substantially correct, and very nearly if not quite accurate. I feel convinced that if His Excellency the Commander-in-Chief will do me the favor, can spare time, and will kindly take the trouble to glance over the work, he will feel convinced that no want of willingness on my part has delayed the report a day.

28. In conclusion, just as I hoped to have some time at my disposal for the correction of this report, an unfortunate outbreak of Cholera occurred in the 74th Highlanders, which so entirely absorbed my attention, as to preclude me from undertaking any other employment for a period of nearly ten days, which now leaves me on the eve of embarkation for England.

J. MACBETH, M.D.,
Surgeon Major, H. M.'s 74th Highlanders.

MADRAS,
7th March 1864.

Extract from the Annual Report, from 1st January to 31st March 1854.

During the progress of the various details of the Corps om Madras to Trichinopoly, the Head Quarters, although ost numerous, did not lose a single case by Cholera, and nly two altogether, one from Delirium Tremens and he other from Typhus Fever; for which several reasons ay be adduced, but the principal one, I am inclined to hink, is from the arrangements of the Officers in command, hose intimate acquaintance with all the habits and requirements of Soldiers, particularly in India, as well as the ature of the country and mode of progression, halting rounds, &c.,—a knowledge most essential to the comfort and afety of Troops marching, more especially in this Presidency, where so far as I can learn, Cholera seems to be n almost certain concomitant of every body of Troops n *route*.

The second march of the Head Quarters of the Regiment, rom Trichinopoly to this place, with only a single case of holera, goes far to confirm my opinion on this point.

The most unfortunate Detachment of all, was that which eft Madras for Trichinopoly viâ Tranquebar, under the are of Assistant Surgeons Warden and Bell. There had een a few cases of Cholera before the Detachments left Madras, and they unfortunately took the disease with them n board, and subsequently suffered from it on their march rom Tranquebar to point of debarkation; they lost 21 men y Cholera and two by Apoplexy, and the Assistant Surgeon in charge was himself attacked but fortunately recovered. The men of the Corps, who served through the Kaffir War, having been exposed to much fatigue, privation and ardship at the Cape on Field Service, where, as well as I an learn, the diet was not of the best description, eaten at ncertain periods, and vegetables extremely scarce and ear, together with the subsequently long voyage, during hich a similar want existed, and salt provisions were the aple of their diet, would have almost led one to expect he development of scorbutic diseases, yet in reality they do ot seem to have occurred to any extent.

Fevers appear to have predominated, more particularly ommon continued; but I cannot help feeling certain that slight mistake has been made in this particular, as my own experience of nearly ten years in India has taught me that common continued Fever, such as is met with in Europe, is extremely rare, and nearly all Fevers of this country are either of a remittent or intermittent type; no less than 47 cases of common continued Fever are mentioned, of which one was fatal; the man died on the march, no Autopsy was performed, and as well as I can learn the disease was of a typhoid nature.

Numerically, Cholera appears first, no less than 45 cases having occurred, of which 25 proved fatal; of these, 21 belonged to the Detachment under Major Handcock, to which I have already alluded. No *post mortem* was made in any instance; indeed, I am given to understand that such examinations are discouraged in fatal cases of Cholera.

The other three fatal cases occurred at Head Quarters, under the medical charge of Assistant Surgeon Lapsley, who seems to have been successful in the majority of cases by pursuing the Calomel and Opium plan of treatment. Cholera seems to have been the only epidemic disease during the period treated of. Of other bowel affections, Diarrhœa has been very prevalent, and now exists to a considerable extent and of rather an aggravated kind; no case has as yet, however, occurred which is not distinctly traceable to either a previous attack of a similar kind, or as complicated with other affections superinducing the disease.

I have been very careful on this point, being aware that a form of Diarrhœa was prevalent in more than one of the hill sanitary stations of Bengal.

All the cases have, as yet, yielded to treatment. I am induced to attribute the prevalence of this disease in the Regiment to the causes I have already mentioned, viz., the length of time the men were on salt provisions and the scarcity of vegetables, as I consider it of *scorbutic origin*.

Syphilis.—Of primary Syphilis, an unusually small number of cases appear, and they have been mild in form; but the number of Buboes seem large in proportion.

A case of amputation was performed by Assistant Surgeon Warden on ship board, but I have no history of it here. The man is now at Madras. Every man in the Regiment has been either vaccinated, or bears marks of natural Small Pox.

The most remarkable feature in the sanitary history of this Corps appears to me the unusually large number of

Recruits, to old Soldiers, who are ill. I am aware that this generally prevails to a considerable extent, but scarcely I think to what my returns shew. It may in some measure be accounted for by the fact, that all the other Soldiers have been somewhat acclimatized to the tropics by the African campaign, while the Recruits having been at once placed under the influence of an Asiatic sun, and led away by the example of the older Soldiers, have unnecessarily exposed themselves to it.

From the Quarterly, 1st January to 31st March 1854.

The large proportion of cases treated have been of Diarrhœa and Fevers, of the former there have been 46, and no deaths have occurred—this form of disease is at present rather prevalent.

From the Quarterly, 1st April to 30th June 1854.

The climate of Jackatalla has been as yet less variable than at any other station I have visited in the tropics. The quantity of rain which has fallen is very trifling, and the range of the thermometer generally not great, though once for a few days it rose as high as 110 in the sun's rays. The prevailing diseases have been bowel complaint and fevers, of the former, I regret to record no less than nine cases proved fatal at this place and two at Trichinopoly ; eight of dysenteric character and one from Diarrhœa of long standing. The total number treated has been of Dysentery 22, of Diarrhœa 65, together 87. The cases of Diarrhœa, though generally severe, (except those which merged into Dysentery, and are accounted for under those heads), all did well save one who died, and the *post mortem* showed that he had suffered long and severely from it in earlier life. I am of opinion that in cases displaying so terrible examples of so fatal an amount of inflammation which must have existed to bring about the complete destruction of the large intestine in so short a period, no dependence can be placed in any mode of treatment save Calomel and free use of the lancet, (when the subject can bear it), with local bleeding and fomentation, assisted, when judicious, by Anodyne injections, counter-irritants leeches round the anus and suppositories.

In two of the cases now convalescent, pieces of lymph, resembling the mucous membrane of the gut, varying from two to three inches in length, came away, after which immediate relief ensued. Should the disease again shew itself at this station, I should feel inclined to try immediate change of air and situation if I can obtain the means.

Fevers.—Fifteen ephemeral, 25 intermittents, 30 remittents and 11 cont. communis have been treated. The first class were all of a mild character, the second and third rather severe, but amenable to treatment; one fatal case occurred, it commenced with Dyspepsia succeeded by severe Diarrhœa, and ultimately lapsed into a case of low Typhoid Fever and killed him. There were 17 cases of Ophthalmia, four at Head Quarters and 13 at Trichinopoly, they all yielded to treatment except one, and in this case the sight of the left eye was lost. One case of Phrenitis occurred, he was admitted on the 26th April and died on the 1st of May, and on examination lymph was found effused on the upper surface of the brain and a large quantity of serum at the base. The cases of Rheumatism were all severe, but yielded to treatment, those of syphilitic origin to Iodide of Potassium and Sarsaparilla, with Blue Pill, assisted by the usual local remedies. One case of Amentia of a mild description occurred at Trichinopoly.

From the Quarterly, July 1st to 30th September 1854.

The health of the Corps at Head Quarters during the quarter has scarcely, I think, a parallel in any of the Colonies, and bears a favourable comparison with Regiments on Home service, a fact which confirms the opinion I submitted to you on a former occasion, with some difference, that the late bowel complaint was entirely irrelative to climate or situation, and entirely of an epidemic character. During the quarter, the total number treated has been 121, of which 23 remained from last quarter only, 98 having been admitted during the quarter; for eight days I had only five men in hospital, there are now ten, and the number of convalescents outside has averaged below eight during the period named.

Prevailing diseases have been remittent and intermittent Fevers, Venereal and bowel complaints, from the latter two deaths have occurred at Trichinopoly; two fatal cases occurred at Head Quarters, one from abscess of the liver, which burst through the diaphragm, and the other in a confirmed drunkard, from the effects of a debauch; five cases of diseases of the eye occurred, but all yielded to treatment, and all the men are now at their duties. Complaints relative to improper supply of bread were necessary, both for last quarter and also for this. Steps were, however, taken by the Deputy Commissary General of the Army to rectify it. The abandonment of early morning parades has had a marked effect in improving the sanitary state of the Corps, which confirms the opinion of myself and others on this point.

From the Quarterly, October 1st to 31st December 1854.

It affords me much satisfaction to record the continued healthiness which prevails. The total number of admissions at Head Quarters have been 72, with an average strength of 611; while at Trichinopoly, where there is a Detachment of 233 men, the admissions amount to 105.

With reference to the effects of the sun on the European constitution, the result of nearly a year's experience amongst the 74th soldiers tends to prove that not only may the men work all day long with impunity, but, further, that men so employed are, *cæteris paribus*, more healthy and robust than their comrades who simply perform the ordinary duties of a soldier; and from the result as yet obtained, the expediency of sending a Regiment on its first arrival in India direct to the Neilgherries is beyond the possibility of a doubt in so far as health is concerned—indeed, it is only necessary to compare the relative proportions of sick at Head Quarters and the Trichinopoly Detachment—and I feel convinced that the residence of a newly arrived Corps, for two or three years, on the Neilgherries, canot fail to be of the greatest advantage both to the Corps and the State, inasmuch as while it to a certain extent accustoms the men to bear the heat of a tropical sun, it strengthens the constitution and invigorates the frame; and I trust it may ere long, become evident to the authorities that, not only as a sanitary, but in an economical point of view whenever it is compatible with the requirements of the service, a hill climate in India is the place for Europeans during the hot season.

The prevailing diseases, if any can be so designated, have been Fevers of a mild description and easily controlled.

Three fatal cases of Hepatic diseases occurred during the quarter, the only fatal cases; the men had all previously suffered from liver.

One case of Paralysis of a severe character occurred, the man had been several times in Hospital with different minor affections and was a hard living soldier. He was suddenly seized with a kind of fit and was brought to Hospital insensible, and with total loss of motion and sensation on the whole of the right side, in which state he continued for three days, save at intervals, when roused, he showed partial consciousness. He was treated with Calomel and Opium and James' Powder, with a blister to the head and along the spine, mustard sinapisms and counter-irritants repeatedly.

He gradually recovered the power of speech, after the mercury had affected the system, and the blister to the head and spine had acted; but it was a much longer time before sensation returned, or the natural warmth of the limbs, and still longer before the motive power was established. He is now, however, walking about convalescent.

From the Annual Report, April 1854 *to* 31*st March* 1855.

There can be no doubt that generally speaking, Scotchmen drink more proportionally than the men of the other two countries, but as neither Hospital nor Orderly room records show any thing to prove it, as unduly affecting either the health or morals of the Corps, it is a proper deduction that this vice does not exist to any injurious extent. But I may remark that I do not consider the price of Porter as sufficiently lowered to induce the soldier to substitute it for Arrack. He must pay 1½ annas for his pint of Porter, and he can get his dram of Arrack for one anna. I feel convinced it would be conducive to the health and comfort of the soldier, were malt put as cheaply as practicable within his reach, and then might not his surplus pay go to give him a pint of Porter as part of his messing.

Principal classes of Diseases.

Numerically Fevers have been 219, but generally of a very manageable kind, some of them severe enough, but amenable to treatment, and the majority have nearly disappeared under the favourable influence of this fine climate. Only one fatal case occurred, and that in the instance of a man who had reached this station from the low country. I of course allude to those men who were here during the year. A considerable number of Fever cases accompanied the Trichinopoly Detachment, all doing well; however, the man alluded to lingered a long time, but the disease assumed a typhoid character and carried him off. Next numerically come bowel affections, of which I regret to say, I cannot ive so favourable an account: the number treated was 239, f whom 23 died and two were invalided to Europe; of these, Cholera cases proved fatal *en route* in the low country, nd here, at this station, 26 cases of Dysentery and 81 of)iarrhœa occurred. When bowel affections first became requent, after a careful consideration I came to the conlusion that a predisposition existed in the individual, and vas more justly attributable to relaxed habit of body han to locality. I had seen a great deal of the disease named *corbutic Diarrhœa* on the Himalayas, from which the 29th 'oot suffered severely, and through the circumstances under vhich the 74th arrived here, rendered them peculiarly suseptible of such attacks, having recently left the field, vhere vegetables and fresh provisions were scarce, and had long sea voyage, during which a similar scarcity prevailed, further acquaintance with this place, and experience of he disease, have served to convince me regarding the orrectness of my premises, though I think its application often of great variety as to the ultimate working effect nd result.

There can be no doubt that during the latter part of pril and throughout May, an epidemic tendency to bowel ffections existed very strongly, but more particularly and evidently developed in the persons of those recently arrived from he low country, still more conspicuously evident and fatal those who had recently suffered from, or had a decided ndency to organic disease of the abdominal viscera. This st result has shown itself more decidedly with reference the portion of this Regiment recently arrived from richinopoly than I ever witnessed before. The strength the Detachments was 273, of whom at least 80 where eated for different bowel affections more or less severe, and veral deaths occurred. The Hospital has been filled with ses of this class ever since they arrived.

In the original attack, on finding the dysenteric symptoms very severe and speedily fatal, I resorted to various modes treatment, generally placing my greatest reliance on Calol as the base of operations. I tried also most of the recent d approved modes of treatment with very indifferent sucss. Those who write about Dysentery at home, and give u a treatment extending over a fortnight or three weeks, ould do little towards helping a patient in the form of sease under consideration, which, without prompt measures carries off its victim in 50 or 60 hours, and leaves you with no large intestine or anything resembling one, but only a blackened and sphacelated pulpy mass of putridity.

I confess to a prejudice against large general bleeding in most tropical diseases I have met with in India, away from large sea-port towns, where you have robust, or, at all events, full-blooded European constitutions to deal with; but in the form of Dysentery now treated of, the effects of full bleeding both local and general, but more especially the latter, accompanied by scruple and half scruple doses of Calomel alone, with mercurial inunctions and grain doses afterwards, till the system is affected, followed by castor oil, gives the only sure mode of safety, and rarely fails if you see your patient in time (a very few hours after, turns the balance), the disease is cut short, and your patient makes a speedy and a satisfactory recovery.

The Diarrhœa of these hills is also of a severe form, but has been much more easily brought under control by a modified degree of the same means. The climate and altitude, I belive, are antagonistic to Cholera; of the cases which arrived up here the fatal ones were generally beyond treatment before I saw them, those in which I was successful were, which one exception, treated principally by Calomel and Opium, and did not individually present any very new or remarkable feature worthy of record. One case was treated by the cold douche, and the experiment was attended with the most remarkable and speedy success.

I consider I am justified, from the circumstances which attended the attack of this disease, in feeling confirmed in an old idea of mine, that altitudes such as Jackatallah are antagonistic to Cholera; nothing more decidedly corroborative of it could have occurred than the instance I am now treating of. The disease, commenced with fatal violence at the very foot of the hills, the whole detachment were immediately marched, and permitted to march through, water with their shoes on and clothes. In this state they marched 17 miles, and from this cause I found on their arrival a strong and decided tendency to bowel complaint among the greater number of them, and prescribed for about 80. The disease was suddenly and happily cut short, but I have no hesitation in saying, that had it occurred in a similar manner in the low country, one-half of the detachment would have suffered. One case of amputation of the thumb from an accident occurred, and one case of compound comminuted fracture of the clavicle ; both did well.

General Remarks.

A very evident cause affecting the health of the men consisted in flooring the temporary Barracks with bricks ; this was repeatedly pointed out and brought to the notice of the authorities, but only one room was floored with wood as an experiment. Another cause was the thick wooden forms on which the men slept not being adapted to the climate. I induced the Officers Commanding and other Officers to make the men provide themselves with mattresses. Another fertile cause of disease in this climate is the marching of troops to the hills at too advanced a season of the year—witness the recent detachment from Trichinopoly ; also in marching, where Cholera is so prevalent as in this presidency, the marches are too long, and the men march too early in the morning. No march, in my opinion, should exceed ten miles, and might be less with advantage. Again, the men sleep on the ground and are not allowed even straw, save for special reasons and when specially recommended by the Medical Officer. I consider marching men up to this climate indiscriminately, without the previous opinion of a Medical Officer experienced in hill climates, is productive of mischievous and often fatal results. No person suffering from, or greatly predisposed to, organic disease, ought to be sent direct to the hills after any prolonged residence in the plains, but to a more intermediate station, such as Bangalore. For the same reasons I think it worse than useless to send men severely ill and likely to improve by a radical change of climate here for short periods ; because there are not many soldiers' cases, who will derive much benefit from a six months' residence here, and next, it requires care and experience to select the men from a Regiment who would actually be injured by a sudden change. The system acts differently in Bengal, where nearly all the troops are stationed above Meerut, most in the Punjaub, where, for seven months in the year, the climate is cold, sharp frosts and ice made in the mornings, which state of things prepare men for a hill climate. It is different in Madras, where you frequently march men some 17 miles from a temperature of 112 to one of 65, and after a fatiguing march, the men find themselves with the Liver and Kidneys both indolent, and in many cases the former, if not in an incipient state of disease, at all events very torpid, yet suddenly called upon to perform more than their ordinary and natural functions, in consequence of the skin not performing its functions with the same rapidity as it did on the plains. It is to be hoped that the day will soon arrive when every European it is possible to spare from the plains, shall be located on the hills at least 4,000 feet above the level of the sea.

From the Quarterly, April 1*st to* 30*th June* 1855.

Since the Annual was despatched, nine fatal cases have occurred, three from acute affections of the Liver, three acute Diarrhœa, one Enteritis, and one from Aneurism of the arch of the Aorta, and the ninth from acute Dysentery. The circumstances and results in nearly all the fatal cases fully bear out the opinions I ventured to express with reference to the imprudence and inexpediency of sending men up suddenly from the plains to this altitude, indiscriminately and without the previously obtained opinion of a Medical Officer; and so long as this practice obtains, so surely will fatal results ensue, and the mortality at this station be more than doubled.

From the Quarterly, July 1*st to* 30*th September* 1855.

During the past quarter I regret to record that there have been seven casualties, three from acute Hepatitis, one from Hepat: chron., two from acute Dysentery, and one from that form of Fever rarely observed in India, viz., common continued.

From the Quarterly, ending 31*st December* 1855.

The sanitary condition was wonderfully improved this quarter, the aggregated strength was 512, of whom 16 remained, 81 were admitted, 91 discharged and 4 remained; of these two died, one a man who was invalided by a Committee, and the other an old and worn-out soldier who had previously suffered from divers severe Chest affections. Of the 81 admissions, 13 were Invalids, who, under ordinary circumstances, would have been removed from the strength of the Regiment, and can scarcely be considered as legitimately entering into the sanitary results of the place. Of the three fractures, two were speedily cured, and the third was more tardy. Three cases of Ambustio occurred, one very severe (the men were employed on the Government orks), he was very much burnt about the face, and the sion of the right eye entirely destroyed, he recovered owly and returned to duty.

From the Quarterly, ending 31*st March* 1856.

The Invalids marched January 11th, and the Recruits ined February 23rd. After the latter date the number of :k was at once more than doubled, principally Buboes, the sult of marching after being so long on ship board; then ;ain at the close of the quarter, 100 picked men marched om the station, at once reducing the strength by one-fifth. nly two cases of Fever were admitted last quarter.

Three cases of Dysentery, all severe; eight cases of heumatism, four obstinate and four the reverse; Venereal ' a severe form and mostly complicated with Bubo. One ıse of Calculus Vesicæ, stone crushed with lithotrite, nearly ; for duty; two cases of obstinate Cephalalgia, pain long ›ntinued, and acute symptoms gradually yielded to long ›ntinued counter-irritation; no fatal case occurred.

From the Annual Report, April 1855 *to* 31*st March* 1856.

The principal classes of disease treated throughout the ear have been Bowel complaints, Hepatic disease, and evers. Of the first 91 cases occurred, of these 26 were :ute Dysentery, 40 Diarrhœa; of the Hepatic, 26 were :ute, six chronic, and two icterus; of Fever 48, principally ıtermittent and remittent.

An epidemic tendency to Dysentery and Diarrhœa occurs ı the climate of Jackatalla, during April, May, and June, ɹo observable in all the hill stations occupied by European 'oops in Asia now, however much modified in degree, umber, and severity, at those places where proper precautions have been adopted and good accommodation rovided.

I must remark the form of Bowel complaints generally rer the Himalayas was milder, and comparatively rarely ɹsumed the acute form. It is an undeniable fact, that both 'atives and Europeans are subject to the disease here at ıis period, but it is also certain that the persons attacked ɜre lived in low-walled, badly ventilated and floored houses; ıis applies to Officers as well as to men, women, and ıildren.

The occurrence of cases has become less frequent, the symptoms milder, and the recoveries more rapid. My deduction, therefore, is, when the men get into good Barracks, and proper medical precautions are adopted to prevent those suffering from latent organic diseases being sent up, until prepared by treatment, that the disease will be nearly eradicated or of so mild a form when it does occur, as to give neither patient nor medical man any uneasiness.

The abolition of morning parades continues to exercise a satisfactory sanitary influence, and the employment of men all day long out out of doors (taking care to protect the head) has substantiated previous experience as to its healthful tendency.

I do not believe it possible for any Commanding or Medical Officers effectually to prevent the spread of any serious inconvenience from Venereal disease, when they do get among native women, without the existence of a Lock Hospital, and I strenuously recommend the establishment of one at this station.

From the Annual Report, April 1*st* 1856 *to* 31*st March* 1857.

It will be observed that the largest number of Bowel complaints particularly were admitted in April, May, and June, and again in September and October, indeed the number of admissions from all causes was greater in the first than in any subsequent quarter. It may be looked upon as the sickly season in these hills.

The larger number of cases have been, Venereal 76; next Diarrhœa 56; third, Hepatic affections 34; fourth, Fevers 28; fifth, Dysentery 24; diseases of the Brain 19; Pulmonic affections 18; Wounds and Injuries 24.

No one can wish to blink the fact that the skin is the grand excretory agent in the low country, and that to a certain extent the functions of the liver, kidneys and bladder are comparatively less actively called upon than in a cold climate, and that all the excretions, save perspiration alone, are voided in smaller quantities after a certain time, modified, of course, by different constitutions, circumstances, and localities.

The new state of affairs in ordinary health becomes the established rule, and the organs referred to being less actively called on do less work, and in many instances become more or less torpid, ending occasionally in some congestion, or perhaps Diarrhœa. Such being the case, it ought not to be deemed a prudent measure to expose persons having a tendency to either of the above evils at once, and without preparation, to a cold climate, where the skin is shut up in a moment perhaps, and the congested and feeble organs called upon to do double work

Let any one who has ever arrived on these hills recollect for a moment that shortly after his arrival either every one of his secretions were wonderfully increased, or that he had what is commonly called Hill Diarrhœa, a direct effort of nature to relieve herself. If he has not either to some extent, he is probably laid up with congestion of the liver, lungs, or kidneys, or headache accompanied by Fever. Great attention should be paid to the clothing.

With reference to the clothing of Soldiers in this country, and indeed in all tropical climates, I think it would be a most beneficial change to the soldier if his calico shirts were entirely dispensed with, and colored flannel ones substituted. It is quite impossible to prevent men throwing themselves down, reeking with perspiration in draughts ; and hence, in my opinion, the origin of many of the most sudden and serious attacks of various forms of diseases we have to contend with.

I am strongly of opinion that when it becomes necessary to move troops at unfavourable seasons of the year, and through unhealthy Districts, it would not only prove judicious, but positively economical, to diminish the sick by providing them with transits.

I had the honor to bring to the notice of the authorities that of five picked men of Her Majesty's 74th, two had dangerous attacks of Jungle Fever. In England, Scotland, and Ireland, now troops rarely march, and though Railroads do not as yet exist to any considerable extent in India, still bullock transit to a large amount could at all times be procured, and if it is a fact that each European on the hills stands Government £130, the cost of transit will be much the most economical mode in the end.

From the Annual Report, from April 1st 1857 to 1st March 1858.

Barracks, when it is necessary to construct them in the plains of India, ought, in the first place, to be built on ground capable of the most perfect and easy drainage, high arches, and be in themselves lofty and thoroughly ventilated. I mean not the ventilation afforded by doors and windows, but independent ventilation from and with the external air. That each soldier should have a minimum of 2,000 cubic feet of air; the sleeping apartment to be used only for that purpose, to communicate, however, with the eating rooms by wide open arches, and beyond these an open verandah. At one end of each block, lavatories for ordinary purposes, a urinal with water constantly flowing through it, a covered plunge bath, and a water closet to be used only at night; at the other end, washing, cooking, and smoking rooms; no smoking to be allowed in either the sleeping or eating rooms. All the rooms to be well boarded, each soldier to have an iron bedstead to fold up in the centre, and mattresses, with at least one blanket. The arches could be cook-houses, stores, godowns, &c., and in every situation well made glass windows. In high altitudes there are no objections to occupying the ground floor, but all rooms to be boarded. The ground floor of no building in India should ever be occupied as wards for sick.

In marching, whenever it is practicable, let soldiers be sent to their destinations either by rail or transit, when that is not possible, do not overcrowd them in tents, let each man have a small couch to keep him off the ground, and a good blanket to cover him. Never march men more than 10 miles in 24 hours save on service, or when it is absolutely necessary; and when there is not a perfect certainty of good pure water, both during the march and at its termination, carry it with the men at any expense. At the end of each march or sharp drill, hold Non-Commissioned Officers and Officers of Companies responsible that the men change their flannel and stockings, hanging the others out to dry, weather permitting; let the whole of a soldier's clothing, inner and outer, be entirely woollen, thinner or thicker according to the season, climate, or other circumstances, but still woollen. Have no stocks, and the trachea free and unpressed on in all its length. Let the head-dress be of any shape you choose, but soft and pliable, that is, of a substance that is capable of adapting itself to the conformation of the men's heads, color white in India, but the shoes should be of Europe leather, pliable and stout.

With reference to the climates of Asia throughout the extent of the Himalaya range in Bengal, from Cashmere to

Darjeeling, and all over the Neilgherries, I am firmly convinced that there is no climate, after 4,000 feet up to 8,000 or 9,000 better adapted for the European constitution in the whole world; and were proper Barracks erected, all the Europeans who could be spared from duty in the plains should be located in them, good married quarters added, schools built and endowed with good roads and railways to the foot of each, with large commodious fortified Barracks on the different lines at important and centrical places. The Indian Army would be the finest, the most efficient, the healthiest, and the most readily available of any in the world. Let no soldier ever take his wife or children to the plains, but let them be cared for and provided for by Government, and it would soon materially assist to recruit itself by acclimatized soldiers, when Pensioners, instead of returning to England, would colonize the hills, happy in the prospect of seeing their children rise up, while, if ever necessity demanded it, they would be able and willing to defend their comrades, wives, and children when they had gone on service, their daughters would become respectably educated, and suitable wives for the well-behaved men.

A great boon to soldiers would be a regular supply of good wholesome malt liquor and aërated waters in the plains at a price that would suit their means, and very much diminish, if it did not entirely supersede, spirituous liquors. Aërated waters are now expensive luxuries, and much beyond a soldier's means. If machines were worked under proper surveillance, it would become a cheap and wholesome drink, and, on emergencies where water could not be had, a portable substitute.

From the Quarterly, April 1st to June 30th, 1858.

The Bellary Buboe is, by far, the most peculiar form of glandular disease I have ever met with. It attacks the inguinal glands, and in most cases without being traceable to any assignable cause unless an anæmic and cachectic habit of body, acted on by increased velocity of the circulation, and the persistent high temperature of the place.

The glands begin generally to swell without much pain, there is at first very often but not always redness of the integument, but all active inflammatory indications speedily give way to leeches and mild local applications. Not so the hardness and abiding enlargement, which, having arrived at a particular stage, can neither be forced to dissolution nor suppuration, but obstinately remains, acting in process of time so entirely as a foreign body, that suppuration of the surrounding tissues in some situation or another takes place, and then, the sooner you make a free opening, the better for your patient, and slow, as it usually is, the more speedy the recovery.

I have put in practice every imaginable kind of treatment, both local and constitutional, I regret to add with equally unsatisfactory results. Indeed, the only decided conclusions I have arrived at are, that you must not confine the patient to bed, that you must give a good and slightly stimulating diet, and use the knife the moment you are satisfied that fluid has formed.

From the Annual Report for 1858-59.

Duty and Employment.

Under this head I regret that I am compelled to state that drills, parades, and hours of parade were in my opinion prejudicial to the health of the men, and persisted in from the period of my first representation up to 31st July 1859, which resulted in to me a most uncongenial and disagreeable correspondence. Still my earnest sense of duty, and the paramount importance of the subject demanded it, and led me ultimately to express my sentiments so strongly, as to call down on me subsequently the censure of the General Commanding the Division, on the appeal of the Officer Commanding, as to my style. Bowing to superior authority, I, as a matter of course, expressed my regret that such an interpretation had been put on any part of my correspondence. From deference to the General Commanding, I without hesitation withdrew and begged to apologise for any part of it, but earnestly deprecated and repudiated the remotest intention of showing disrespect or expressing myself in terms stronger than I deemed the urgency of the case rendered imperative. Nay, further, that I respectfully submitted, I could discern nothing in my correspondence bearing such a construction.

The first course I adopted was seeking personal interviews with my Commanding Officer, trying to convince him of the necessity for adopting my views. I then wrote, thus ensued the correspondence referred to. I never neglected my duty in first urgently and personally representing, but failing to attain my object felt it absolutely necessary to record and remonstrate. I now beg to state my reasons for doing so.

During the hot season, I mean the period embraced in the time to which the correspondence alludes to, no less than 184 cases of Fever came under treatment, besides a vast number treated as Dispensary patients, there being actually insufficient Hospital accommodation; further, I represented that with reference to recruits no less than 60 were under treatment for Fever, making it apparent that nearly one-third of the whole were twice under medical treatment, some oftener; still, regardless of this, I was not only unsupported, but greatly opposed by the Officer Commanding.

I have already formally represented so much in my Quarterly Report, I now beg to add, experience has taught me that in India during the hot season it is decidedly injurious and imprudent to have evening parades at all, unless absolutely necessary for urgent special reasons.

After the discomfort, lassitude and fatigue of a day in the hot season, a soldier, if left to himself, would naturally embrace the opportunity of going out for wholesome exercise of some kind; whereas, if compelled to dress and attend a parade, however easy, he returns to his barrack-room hot and uncomfortable, perhaps a little discontented and does not leave it. Having been drilled in the morning and expecting a parade, the chances are he lounges about most of the day half asleep and half awake. At this station there is no possible opportunity or means of amusement. Mark the result, he cannot sleep at nights, he is feverish, irritable, and restless, and to my personal knowledge many such men leave Barracks and resort to places where they can indulge in the most painful description of debauchery and drinking.

It is occasionally stated that if a man or men go and walk about all day in the sun, what harm can parades do; surely there is no analogy between what a man does for his own pleasure and will soon abandon of his own accord if he finds it disagreeable or hurtful, and what every man must do irrelative to his feelings, constitution or inclination—hence the differences. Let men have the evening to themselves, at all events during the hot season; two hours drill in the morning is as much as is good for any European soldier, at the very outside, I think considerably less in such a climate as Bellary, and all ought to have their accoutrements off by 7 A. M. and be under shelter.

Crime and Punishment.

The remarks I made under this head last year entirely apply with the following exception. Nothing has been done to improve the ventilation or increase the accommodation of the cells; last year 11 men were treated for drunkenness, this year 13; total crimes last year 33, this year 40; strength this year 957½, last year 1,064; but as I have remarked under the head intemperance, there has been increased drinking to an unusual extent.

General Remarks.

Having under the separate heads entered fully into my views on all the subjects of material importance, I have little to add under this head, save to *repeat*, that in my opinion long drills, exposure to the sun unless absolutely necessary, and evening parades at all during the hot season, are decidedly prejudicial to the health and comfort of the soldier.

There does not appear to be in some Commanding Officers an adequate conception as to the vast importance of providing amusement or occupation for the leisure hour of the soldier. I used every argument in my power to impress this on the Regimental authorities and represented through them the entire want of it at this station. I am at a loss to understand where the fault lies, knowing, as I do, that His Excellency the Commander-in-Chief sanctioned, recommended, and urged the erection and completion of Fives Courts, Racket Courts, Skittle Alleys, &c. I regret, however, to record the fact, that though three years have elapsed since His Excellency's visit to this place, only one Skittle Alley has been completed, and that only very recently, through the influence of Major General Coffin. There are now in progress a Skittle Alley, Fives Courts, and no other means of amusement has yet been provided by the proper authorities. I strenuously urged on the Officer Commanding the erection of a pandal to cover a piece of ground, and took the liberty of suggesting the appropriation of the Canteen Fund for this purpose. My views were not entertained, and nothing was done; surely no more legitimate mode of using this fund could be thought of. Might I be permitted to propose for consideration, that if instead of as now limiting the amount which may be held in the hand of the Regintal authorities to a certain sum, after which it lapses to Government, a rule might be made fixing the minim, and the surplus disposed of quarterly by a Committee nposed of the Officer Commanding, the Surgeon, Senior ptains, and Quarter Master, to provide healthy means of usement and recreation for the men.

In so far as I have been permitted to remark, I have reatedly and earnestly brought under notice the great want cleanliness in and about this station, and the disregard of en common decency among the natives. I have proposed medies and strongly represented the dangerous effects iich might result from the state of certain localities, and inted out means as simple as inexpensive, but without single encouraging or beneficial result.

And last, notwithstanding the melancholy repeatedly reesented and palpable evils which result from the want of ygienic or Police control over the recognized prostitutes, iere the evil is clearly on the increase, it is a matter of e greatest importance.

I strongly recommend to the authorities the establishnt of an aërating machine for manufacturing aërated inks for Europeans at all stations. I know from personal servation, that it would be a source of considerable emolunt to Government, while it would provide the soldiers th a good wholesome and agreeable drink, at a moderate te, keep him out of the bazaar, and create such a fund as uld enable the Government to supply the troops with lt at a very reduced rate, and thus do away with the conmption of ardent spirits to a considerable extent, and I ink entirely prevent men from resorting to the poisonous coctions now sold to them under various appellations in e bazaar.

With reference to clothing for the men, I beg permission offer my opinion that whatever the color may be for the ldiers' coats, the materials ought to be of woollen, and such a texture and color as will preclude the necessity r washing. The present material when washed and iffened is both unyielding and heavy, besides frequent ashings wear it out, and soldiers are very apt to put on the cket damp. They were all much delighted with the Red rge Jacket; it certainly looked neater, and seemed to fit eir figure and looked smarter.

From the Quarterly Return, April 1st to 30th June 1860.

Heat Apoplexy—by Assistant Surgeon Chester.—Some fatal cases of Heat Apoplexy occurred, but notwithstanding the severity of the season, only three were fatal. During the same period last year there were eight. In nearly every case which I have witnessed, the attack has been preceded by Fever, and the great predisposing cause seems to be nervous depression and debility, however arising. On this account too much care cannot be taken in arranging drills, which cause much fatigue during the hot season. Acting on this idea, several who suffered from Fever were placed on the convalescent list, as any exertion resulting in more than ordinary fatigue invariably brought on a relapse.

The description of Heat Apoplexy that best describes what I myself have witnessed is by Deputy Inspector-General Longmore, in the Indian Annals of Medical Science. He there mentions the preceding Fever, and considers it remittent; but although, without doubt, Heat Apoplexy is liable to supervene if the Fever be neglected, some of the cases which recovered and which he considered Heat Apoplexy, appear to me very like severe cases of Fever, and if they are to be considered Heat Apoplexy, many returned as Fever from this Regiment should be considered as recovered cases of Heat Apoplexy. Heat Apoplexy, as I understand it, very seldom recovers, the engorgement once having taken place, the patient's chance of life is very slight.

Annual Report for 1860.

Diet.—During about half of each year, there is a tolerable supply of country vegetables, and generally of good wholesome potatoes, but during the hottest and driest periods of the year there are scarcely any procurable; while this lasts, the only real variety offered is the change between mutton and beef, the contractor engaging to furnish the former twice a week. This he failed to do for a considerable period, a fact I first urgently represented verbally and afterwards in writing, but with no useful result; the letter was returned by the Adjutant by order of the Commanding Officer, with reply to the effect that it was a frivolous and vexatious complaint. There cannot be a doubt that under any circumstance, I should have neglected my duty had I failed to act as I did, but in this instance I will go further, and state my confirmed impression that had the terms of the contract been strictly enforced, mutton might have been procured; nay, more, for my own consumption I procured mutton at a moderate rate. The contract rate was reduced last year, which, of course, induced the butcher to spend as little as he possibly could, and my experience has always been that when contract rates are not very remunerative in such a country as India, where frequently men of very small capital obtain contracts, the result is that the soldiers suffer, as the native will not lose if by any measure, however complicated, he can avoid it, irrespective of ultimate consequences; whereas, when the contractor finds it remunerative, he is anxious to retain it and establish a character. Be that as it may, the result of my simple performance of my strict duty on this occasion has proved most unpleasant to me. My Commanding Officer taking offence at the fact above-named being entered in my sanitary report under the head diet, sent for me to the orderly room and desired me to withdraw or expunge it. I of course respectfully declined, and wished to point out to him in the instructions forwarded to me in the usual official form as well for his guidance as mine, the absolute necessity for recording the fact. He refused either to look or to listen. But as this matter has been prominently brought to notice, I must indeed have little doubt it will shortly be finally decided, though to my comprehension nothing can be clearer than the instructions contained in Medical Regulations, page 77, para. 1, page 80, para. 21, page 82, para. 27, and lastly, at page 107, under the head of Instructions to Medical Officers in making up annual reports.

Climate.—The dry persistent heat of Bellary has a decided and marked effect both on the circulation and respiration, and I am confidently of opinion, cannot but have an injurious effect on the European constitution, which, though it may not produce immediate noticeable results to any save an acute observer, will ultimately display itself to the detriment of the health of the men generally, and render it advisable that they should not be so long exposed to its influence, and when observed be sent to a station, the temperature of which is more moderate.

Special Remarks.—One very remarkable case of Hepatitis occurred in the person of a soldier named Robert Conwy, a tailor by trade, a very free liver and a very violent tempered man. He had been frequently treated in

Hospital for various complaints, but generally suffered from congestion of the liver with torpidity of that organ, was usually relieved by an emetic purgative, or when more severe, a few leeches. In January 1860 he was admitted with a decided attack of acute Hepatitis in a violent form. He was energetically treated with Calomel, Tart. of Ant., Saline purgatives, leeches freely applied, and occasionally an Anodyne at bed time, with farinaceous diet, the more violent symptoms were thus subdued, but after no very long period unmistakeable indications of the formation of a deep-seated hepatic abscess displayed themselves. He became restless, and the pulse rose to 120, countenance anxious, skin cold and clammy, bowels costive, and no appetite; then succeeded tension of the abdomen, partly from flatus, but principally from increased volume of the liver, and great oppression in breathing, dyspnœa. Anodynes and hot cataplasms gave partial relief for a time. For a time the most careful examination could detect no symptom of pointing, though the diffuse swelling was very perceptible. On the 6th of January the breathing became so difficult, and the danger of suffocation so imminent, that I determined to puncture. I did so between the 6th and 7th ribs, and evacuated about four pounds of purulent matter with great and instant relief. The symptoms were favorable, the patient improving and regaining strength (quantities of pus being evacuated through a catheter daily) for five or six days, when a recurrence of the bad symptoms set in. Judging from the constitutional symptoms as well as the elastic feel of the side, I suspected a second abscess had formed. I inserted a catheter (No. 2), it penetrated easily, and a large quantity of pus came away. From this time he improved, his recovery being very much retarded by his violent temper. The external wound healed up after about 22 lbs. of pus had been evacuated; he was sent to the Ramandroog, and eventually recovered completely. This is the fourth instance in which I have been successful. This man afterwards at some highland games won a race.

I wish very much to have continued my extracts from the records kept at Bellary, but find that time will not permit me. My reports are, however, at all times available for reference at the different places where such records are retained, and will substantiate and corroborate all the conclusions at which I have arrived, bearing on the sanitary history of the 74th Highlanders while quartered at Bellary.

MEMORANDUM.

	JACKATALLA.								BELLARY.							
	March to December 1854.		January to December 1855.		January to December 1856.		January to July 1857.		August to December 1857.		January to December 1858.		January to December 1859.		January to March 1860.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers..................	18	2	50	1	24	2	9	1	30	0	52	0	208	1	9	0
Stomach and Bowel Complaints......	112	10	92	10	87	5	30	2	14	0	130	7	176	8	17	0
Liver Complaints......	8	4	33	7	29	0	10	2	1	1	23	6	49	1	8	1
Venereal Complaints.	84	0	34	0	66	0	45	0	14	0	182	0	310	0	53	0
Total...	322	16	209	18	206	7	94	5	59	1	387	13	743	10	87	1
Strength...	586½		552¼		425½		411¼		215¾		555½		931¼		804¾	

Regiment arrived at Jackatalla in March 1854.	*Regiment arrived at Bellary in August* 1857.
DEATHS.	DEATHS.
1 Apoplexy in April 1854.	1. Apoplexy in April 1858.
	1 do in do. 1859.
	4 do in May ,,
	2 do in June ,,
	1 do in Sept. ,,
	1 Coup de soleil in Oct. ,,

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4. Name the Station at which the Troops were before coming to the present station, the length of time they were in their former station, and the date of leaving it, their state of health there, and the diseases from which they chiefly suffered, their state of health on arriving at their present station, and the date of arrival, and the diseases from which they have chiefly suffered since arriving.

State whether any portion of the men's accommodation in your present Station is more unhealthy than the rest, if so, state to what such greater unhealthiness is attributable.

Head Quarters at Jackatalla arrived in March 1854, left in July 1857.

1st,—Left three Companies at Trichinopoly, those joined Head Quarters in March 1855, five Companies left for Cannanore in February 1855.

Subsequently 100 men left for active service in March 1856.

Head Quarters left Jackatalla in July 1857, part reached Bellary by transit in August 1857, two Companies left for the Field, one in August, one in September 1857, three Companies left for Dharwar in March 1858, Cannanore Wing joined in February 1858.

The annexed table will shew clearly at a glance and better than any verbal description, the health of the Head Quarters, by which it is apparent on arrival, Fevers, Bowel complaints, and Venereal were the prevailing diseases. As the stay of the troops on the Hills became prolonged, all the diseases rapidly diminished in number, the Bowel complaints became milder in type and more controllable, and the Fevers almost disappeared save in the cases of recruits and new arrivals from the plains.

There was not a man under treatment when the Head Quarters reached this station, and on the march only two were treated, one an old chronic case of Bowel complaint, the other of Cholera. Since that period Fevers, Bowel complaints, Liver and Venereal have been the prevalent diseases; the Fevers, a seasonal local epidemic, sharp in attack, but of a short duration and very controllable. To admit of any satisfactory deduction, it is necessary to remark that as large Detachments from time to time left for the Field, all the most active and robust men were chosen by the Medical Officer in charge, the weak and sickly retained, so that ultimately Head Quarters became naturally a General Hospital for the Regiment.

Up to this period eleven fatal cases have occurred either from the disease variously styled Heat Apoplexy, Insolation or Coup de soleil.

The accommodation for the bachelors is all of the same description in blocks, overlapping each other in eschelon. The Non-Commissioned officers and married men are in small separate rooms at either end; there is no surface ventilation save when the doors are open, they are very narrow, have no windows, stone floors, and have neither proper lavatories nor cooking places attached.

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6. State whether you have been in charge of troops at Hill stations, if so, name the hill station and state generally the result of your experience of residence at hill stations on the health of the troops.

I practised amongst European Officers and their families for six months at Kussowlie on the Himalayan range, at Murree on the Cashmere range, for nearly a year in charge of a sanitary depôt which I formed there, and in medical charge of the 74th Highlanders for three years on the Neilgherries. At Kussowlie all were more or less Invalids on arrival and benefited by the climate; and many entirely recovered, and not one death occurred during my time, the number I must add was limited, probably, 60 or 70 Europeans.

At Murree, the soldiers who came under my charge were for the most part mise rable, emaciated and debilitated, they came chiefly from Peshawur, and had suffered either from intermittent or remittent Fevers, Liver, or Bowel complaints, or were all more or less suffering from functional debility of one or more organs; besides those there were some thirty or forty families to the best of my recollection. I have no means of reference by me. Only one casualty occurred, from Phthisis, I think, I am certain not more than two. All improved, and there were no diseases I could fairly attribute to climate or locality.

My next experience of a hill station was on the Neilgherries, in Medical charge of the 74th Highlanders. The table annexed to question No. 4 exhibits the result. The state of affairs was affected by the following very prominent features, namely, the majority of the men had been long in the Field, in Africa, often on different rations, and then had a long sea voyage on salt provisions. 2nd,—Many of them had volunteered from other Regiments and been long resident on the plains. 3rd,—They had a long march, and were sent into low, thatched, badly ventilated Barracks, with mud floors scraped out of the face of a hill rising up many feet behind them.

7. Have you observed whether troops who have been resident for some time on hill stations are more or less liable to attacks of febrile or other diseases on returning to the plains, and will you state the circumstances which in your opinion have influenced such greater or less liability.

7. All my observations and experiences have led me to the confirmed conclusion, that, as a general rule, hill stations, if 4,000 feet above the sea level, are most congenial to the health of Europeans, most beneficial to Invalids, and that on being again called to serve in the plains, they have improved constitutional powers to resist Fevers and other diseases, and are capable of more fatigue and exertion than troops long resident on the plains. This result is brought about, in my opinion—1st, by the mildness and congeniality of the climate; 2ndly, by the fact that the men *can take* plenty of exercise in the open air, which induces a vigorous frame, healthy appetite, and sound sleep, while on the other hand in plains, men for a great part of the year are much confined to the house, suffer from heat and thirst, do not take exercise, drink a great deal, and consequently do not sleep well, and have not vigorous digestion or good appetite.

8. From your experience do you approve or disapprove of selecting hill stations for troops.

8. I approve of hill stations in the very highest degree.

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9. Are there any diseases peculiar to hill stations with which troops are liable to be attacked on going to them.

9. Yes, principally Liver and Bowel complaints, and men with functional diseases of important organs, those being in an inert torpid weakened condition are likely to be called into active force and serious attacks to result.

10. Are there any precautions as to diet, clothing, shelter, duties or exercises, which would guard the men from such attacks and enable them to obtain greater benefit from residence in hill stations.

10. Every one of the points named in this question are of the most vital importance and call for the gravest consideration.

1*st.*—*Clothing.* Every soldier ought, at the conclusion of his first day's march up the hills, to be furnished with a complete suit of flannels and woollen clothing.

2*nd.*—One of the greatest advantages of a hill climate is nullified, unless a man has a warm, well ventilated dry room, with at least 1,500 or 2,000 cubic feet of air. In my opinion the majority of the Bowel complaints result from badly ventilated confined damp rooms, with either stone, or still worse, clay floors; every room ought to have wooden flooring. It is very bad to have houses built on the face of high hills, the pressure of the building and the gravitation of the water from above, causes damp to arise both in the forms of moisture and vapour.

11. From your own experience, what seasons are best adapted for residence in hill stations? And what is the shortest period of residence which would enable troops to obtain the full benefit of such residence to their health.

11. It is a most difficult question to answer satisfactorily and concisely, but to the best of my judgment, as a general rule for all visitors, the latter part of the so-called cold season in the plains would be the best for reaching the hills, because it strikes a balance both ways, and makes the transition less sudden and the change more gradual; but there are many different circumstances which tend to modify opinion on this head, the present state of health of the men, length of time they had served in India, and the height of the station they were destined for. I am of opinion that to derive full benefit from a hill station, residence of, at least, two years is necessary.

Page 33.

12. Is there any period of residence beyond which injury is likely to be inflicted on the health of the troops on returning to service in the plains.

12. From experience and observation, I am of opinion, that taking into consideration the usual wear and tear of human life and its ordinary diseases, there is no climate I know more conducive to robust health than hill stations such as the Neilgherries. As a case in point, number of Invalids and Pensioners, both men and Officers who have been obliged to relinquish active employment from inability to endure the climate of the plains, settle on the hills, recover health, strength, and vigour, live to a good old age, and I am, therefore, of opinion that in an abstract point of view,

the longer a man resides on the hills, of course taking age into consideration, the greater his power of resistance to the climate of the plains when called on to serve. There are, I am aware, special cases where this would not hold good, but so few, that the exceptions only go to prove the rule.

13. Are any and what special precautions required for protecting the health of the troops on leaving hill stations for the plains.

13. That depends very much on the season of the year, and the nature of the country at the foot of the hill, but in my opinion, it is a wise and good precaution to give every man a little Quinine each morning before marching for the first eight or ten days.

Immediately men reach the plains, they ought to be provided with suitable clothing according to the nature of the climate and season of the year. Where the jungle is dense and extensive, men ought not, if possible to avoid it, either sleep in it or march through it, but be sent right through either in transits or on elephants, or still better, by railways. The water at the foot of the hills, as a rule, is often bad, that in the adjacent jungles always, therefore water ought to accompany men till they get through the latter. No soldier ought ever to sleep on the bare ground, when it is possible to avoid it; they are not only liable to contract Bowel complaints, but also to surface evaporation and malarious influences, not to mention the used up air of each other's lungs and evaporation from each other's bodies. Any space below them, however small, causes a current, and raises the foul air above the breathing apparatus.

To ensure the greatest amount of benefit to the individual and satisfaction to Government, I consider it most necessary and desirable, that where circumstances and nature of country would admit, as Mysore for instance, close to the Neilgherries, a permanent hospital should be established under the charge of an experienced Medical Officer, where men could be taken charge of either going to or returning from hill stations when deemed expedient, and that to this end when bodies of troops are ordered either up or down, they may be first carefully examined by such Medical officers in conjunction with the Regimental Medical officers. The Staff Medical officer on the hills and the one at Mysore could assist each other, and many untoward mistakes be avoided.

14. As a general rule, and provided there were no Military or other reasons against it, would it or would it not be the course most conducive to the preservation of the health of troops serving in India, to locate them on hill stations with short periods of service in the plains? or does your own experience lead you to consider that service in the plains, with short periods of changes to hill stations, would or would not be equally conducive to the health of the troops?

14. Having enjoyed varied and considerable opportunities of witnessing the effects of both experiments, I have not a moment's hesitation in saying, have as many European toops as it is possible to spare located on the hills, and for as long periods as the requirements of the Service will admit; they will always be found as a rule fit for service any where when called on. When I state this I mean not placed 2,000 or 3,000 feet, but not under 4,000.

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24. What time of the year do you think it desirable that Invalids should leave India for Home.

This question cannot be clearly answered; but, as a rule, I think the best is, that Invalids shall not be moved till arrangments have been definitely settled for their embarkation, (as remaining long at sea-port towns is productive of the greatest injury both to the individual and the service,) where the distance, mode of travelling, and nature of the climate will permit. I think the months of January and February the best for embarking troops going Home round the Cape.

Diseases.

1. Are there regular Inspection Parades for the discovery of incipient diseases at your station, and at what time.

There are regular health inspections every Saturday afternoon, in the 74th, and for those on guard or duty on that day or the following Monday. Under any unusual circumstances, there are special inspections when deemed requisite.

(Signed) J. MACBETH, M.D.,
Surgeon, H. M.'s 74th Highlangers.

BELLARY, 11*th April* 1860.

A.

Return of Sick and Wounded of the 74*th Highlanders, from January* 1854 *to* 31*st December* 1863.

			Remained.	Admitted during the above period.	Total treated.	Discharged during the above period.	Died do. do.	Remaining.	Diseases of men discharged from the service on account of disease.	Diseases of men invalided from the service.	Foreign stations for change of climate in the same period.
CLASS I.—ZYMOTIC DISEASES.	ORDER 1. Miasmatic Diseases.	Variola	...	2	2	2	...	...	...	...	...
		Varicella	...	6	6	6	...	...	...	...	...
		Morbili	...	2	2	2	...	...	...	...	...
		Tonsillitis	...	105	105	105	...	...	...	...	...
		Parotitis	...	2	2	2	...	...	...	...	...
		Cynanche Trachealis	...	...	...	...	...	...	...	...	...
		Pertussis	...	...	...	...	...	...	...	...	...
		Febris Typhoides	...	2	2	2	...	...	...	...	...
		Febris Typhus	...	3	3	...	3	...	...	...	...
		Febris Intermittens	...	586	586	582	1	3	...	...	5
		Febris Remittens	...	235	235	232	3	...	...	...	...
		Febris Continua	...	567	567	557	10	...	...	...	1
		Ophthalmia	...	419	419	418	...	1	2	3	1
		Erysipelas	...	13	13	13	...	...	...	...	...
		Erythema	...	2	2	2	...	...	...	...	...
		Anthrax	...	6	6	6	...	...	...	...	...
		Furunculus	...	4	4	4	...	...	...	...	...

CLASS I.—ZYMOTIC DISEASES.	ORDER 1. Miasmatic Diseases.	Dysenteria	...	599	599	547	51	1	15	3	23
		Diarrhœa	...	787	787	776	1		6	1	14
		Cholera Biliosa	...	3	3	3			...	...	...
		Cholera Spasmodica	...	121	121	59	62		...	...	...
		Rheumatismus	...	545	546	544		2	9	6	14
	ORDER 2. Enthetic Diseases.	Syphilis Primaria	...	755	755	752		3	1	...	2
		Syphilis Secundaria	...	187	187	185	1		6	6	14
		Iritis Syphilitica	...	1	1	1			1	...	1
		Gonorrhœa	...	597	597	595		2	...	...	...
		Phymosis et Paraphymosis	...	7	7	7			...	...	...
		Bubo	...	507	507	502		5	...	...	...
		Orchitis	...	155	155	155			...	...	...
		Strictura Urethræ	...	29	29	29			...	...	1
		Lepra	...	1	1	1			...	...	...
	ORDER 3. Dietic Diseases.	Purpura	...	2	2	2			...	...	...
		Ebriositas	...	124	124	122	1	1	...	...	...
	ORDER 4. Parasitic Diseases.	Porrigo	...	1	1	1			...	...	...
		Scabies	...	89	89	89			...	...	...
		Vermes b. Tænia Solium	...	21	21	21			...	...	...
		Do. d. Ascaris Lumbricoides	...	1	1	1			...	...	...
		Do. f. Dracunculus	...	58	58	58			...	...	...
CLASS II.—CONSTITUTIONAL DISEASES.	ORDER 1. Diathetic Diseases.	Podagra	...	8	8	8			...	...	...
		Anæmia	...	15	15	15			27	9	20
		Anasarca	...	12	12	10	2		...	..	...
		Scirrhoma	...	1	1	1			...	...	...
		Lupus	...	2	2	2			...	...	...
	ORDER 2. Tubercular Diseases.	Scrofula	...	71	71	71			17	10	17
		Phthisis Pulmonalis	...	48	48	35	9	4	5	4	6
		Hæmoptysis	...	18	18	15	2		1	...	1

Return of Sick and Wounded of the 74th Highlanders, from January 1854 *to* 31*st December* 1863.—*(Continued.)*

			Remained.	Admitted during the above period.	Total treated.	Discharged during the above period.	Died do. do.	Remaining.	Diseases of men discharged from the service on account of disease.	Diseases of men invalided from the service.	Foreign stations for change of climate in the same period.
CLASS III.—LOCAL DISEASES.	ORDER 1. Diseases of the Nervous System.	Encephalitis	...	1	1	...	1	...	...	...	...
		Apoplexia	...	23	23	1	22	...	...	...	...
		Paralysis	...	31	31	26	5	...	3	2	3
		Delirium Tremens	...	32	32	26	6	...	...	...	...
		Mania	...	6	6	6	..	...	1	1	2
		Monomania	...	13	13	13	..	...	...	1	1
		Dementia	...	8	8	8	...	...	3	3	1
		Epilepsia	...	17	17	17	...	...	2	2	2
		Hysteria	...	4	4	4	..	...	...	...	...
		Cephalæa	...	130	130	130	...	..	...	...	7
		Neuralgia	...	9	9	9	...	...	...	..	...
		Cœcitas	...	...	...	...	...	...	2	...	2
		Otitis	...	55	55	55	...	...	...	...	...
		Dysecœa	...	2	2	2	...	...	...	...	...
	ORDER 2. Diseases of the Circulatory System.	Carditis	...	52	52	45	7	...	3	3	6
		Pericarditis	...	9	9	7	2	...	...	...	..
		Morbus Val. Cordis	...	46	46	43	1	2	6	3	7

CLASS III.—LOCAL DISEASES.	ORDER 2. Diseases of the Circulatory System.	Aneurisma	...	12	12	10	1	1	1	1	1
		Angina Pectoris	...	1	1	1	...	...	...	...	...
		Syncope	...	1	1	1	...	...	...	...	...
		Phlebitis	...	1	1	1	...	...	...	...	...
		Varix	..	5	5	5	..	...	1	2	1
	ORDER 3. Diseases of the Respiratory System.	Laryngitis	...	1	1	1	...	...	..	...	...
		Bronchitis	...	550	550	542	6	2	8	6	10
		Pleuritis	...	11	11	11	...	...	..	...	...
		Pneumonia	...	28	28	24	4	...	..	...	1
		Asthma	...	21	21	21	...	...	2	1	3
		Emphysema	...	1	1	1	...	...	...	..	...
	ORDER 4. Diseases of the Digestive System.	Gastritis	...	8	8	8	...	...	...	...	...
		Enteritis	...	9	9	7	2	...	...	...	...
		Obstipatio	...	98	98	98	...	...	...	1	...
		Hernia	...	15	15	15	...	...	..	1	1
		Dyspepsia	...	491	491	490	1	...	6	2	12
		Colica	...	42	42	42	...	...	...	...	...
		Hæmatemesis	...	1	1	1	...	...	...	..	...
		Hæmorrhois	...	108	108	108	...	...	...	...	1
		Fistula-in-ano	...	3	3	3	...	...	1	...	1
		Splenitis	...	34	34	34	...	...	..	...	...
		Hepatitis	...	440	440	409	29	2	15	3	22
		Icterus	...	36	36	33	3	...	...	...	...
		Ascites	...	2	2	1	1	...	...	...	...
	ORDER 5. Diseases of the Urinary System.	Nephritis	...	14	14	14	...	...	...	...	...
		Ischuria	...	10	10	10	...	...	...	...	...
		Nephria	...	4	4	3	...	...	...	...	...
		Diabetes	...	4	4	4	...	..	...	...	2
		Calculus Vesicæ	...	1	1	1	...	...	...	...	...
		Hæmaturia	...	2	2	2	...	...	...	...	..
		Cystitis	...	4	4	3	1	...	...	...	...

Return of Sick and Wounded of the 74th Highlanders, from January 1854 *to* 31*st December* 1863.—*(Continued.)*

			Remained.	Admitted during the above period.	Total treated.	Discharged during the above period.	Died do. do.	Remaining.	Diseases of men discharged from the service on account of disease.	Diseases of men for discharge. Invalided from the service.	Foreign stations for change of climate in the same period.
CLASS III.—LOCAL DISEASES.	ORDER 6. Diseases of the Generative System	Varicocele	...	1	1	1	...	...	...	...	...
		Orchitis	...	37	37	37	...	...	...	...	...
		Hydrocele	...	14	14	14	...	...	...	1	...
		Bubo, N. S.	...	15	15	15	...	...	...	...	...
	ORDER 7. Diseases of the Locomotive System.	Arthritis	...	3	3	3	...	...	...	...	...
		Synovitis.	...	5	5	5	...	...	...	...	...
		Hydrarthrus	...	2	2	2	...	..	...	...	...
		Contractura	...	5	5	5	...	...	1	1	1
		Ostitis (including Periostitis.)	...	2	2	2	...	...	...	...	...
		Necrosis	...	5	5	5	...	...	...	...	...
	ORDER 8. Diseases of the Integumentary System.	Urticaria	...	2	2	2	...	..	...	...	...
		Eczema	...	14	14	14	...	...	...	...	...
		Herpes	...	32	32	32	...	...	..	...	...
		Pemphigus	...	1	1	1	...	...	...	...	...
		Psoriasis	...	4	4	4	...	...	...	...	...
		Phlegmon	...	389	389	388	...	1	1	1	...
		Paronychia	...	34	34	34	...	...	...	...	...
		Abscessus	...	8	8	8	...	...	...	...	...
		Ulcus	...	353	353	350	...	3	5	3	4

CLASS IV.—DEVELOPMENTAL DISEASES.	ORDER 4. Diseases of Nutrition.	Atrophia. Asthenia	...	55	55	54	1	...	3	2	5
CLASS V. VIOLENT DEATHS OR DISEASES.	ORDER 1. Accident.	Ambustio	...	9	9	9	...	...	...	...	...
		Explosio	...	3	3	3	...	...	...	..	...
		Insolatio	...	10	10	8	2	...	1	...	1
		Luxatura	...	30	30	30	...	...	...	...	...
		Subluxatio	..	187	187	186	...	1	1	...	1
		Fractura	...	56	56	55	1	...	...	1	...
		Contusio	...	272	272	272	...	...	...	...	...
		Vulnus Sclopetarium	...	4	4	4	...	...	...	..	...
		Vulnus Incisum	...	74	74	72	2	...	...	..	...
		Morsus Scorp	...	1	1	1	...	...	...	...	..
		Venenatio	...	1	1	1	...	...	...	...	..
		Vesiculæ pedis	...	1	1	1	...	...	...	...	...
	ORDER 6. Other Diseases, &c.	Punitus	...	17	17	17	...	...	...	...	...
		Amputatio	...	9	9	9	...	...	1	1	...
		Tumores	...	33	33	33	...	...	1	1	1
		Not diagnosed	...	399	399	399	..	...	1	1	...
		Worn out	...	...	...	..	...	...	196	147	57
		Total...	...	11,203	11,203	10,912	255	36	355	232	278

B.

Yearly Abstract.

Years.	Strength on the 1st of January.	Admitted during the year.	Died.		Remaining on the 31st Dec. 1863.	Percentage of sick to strength.	Percentage of deaths to sick.	Percentage of deaths to strength.	Barracks at which quartered.
			In Hospital.	Out of Hospital.					
1854	779	1,154	57	3	...	148·13	4·93	7·70	On first arrival badly quartered, Cholera having broke out in the Detachments & a severe form of Dysentery at Jackatallah.
1855	856	1,047	34	3	38	122·31	3·24	4·32	
1856	952	1,082	18	...	45	113·66	1·66	1·89	
1857	947	998	14	3	50	105·37	1·40	1·79	
1858	1,047	1,427	32	1	57	132·28	2·24	3·14	
1859	995	1,479	35	1	42	148·64	2·36	3·61	
1860	982	938	13	...	57	95·52	1·38	1·32	
1861	927	1,276	10	2	51	137·64	0·78	1·29	
1862	739	1,165	32	2	39	157·64	2·74	4·60	
1863	707	637	10	5	36	90·9	1·57	2·12	
Total...	89,031	11,203	255	20	415	1,251·28	22·30	31·78	
		1,120·3	25·5	2·	41·1	125·128	2·23	3·178	

D.

Return of Women, from 1*st January* 1854 *to* 31*st Dec.* 1863.

STRENGTH 97.

DISEASES.	Remained.	Admitted.	Total treated.	Discharged.	Died.	Remaining.
Variola	...	2	2	1	1	...
Morbilli	...	3	3	3	...	...
Tonsillitis	...	5	5	5	...	...
Pertussis	...	1	1	1	...	...
Febris Typhus ...	...	2	2	1	1	...
Febris Intermittens ...	...	89	89	88	1	...
Febris Remittens ...	...	16	16	16	...	...
Febris Continua	...	78	78	77	1	...
Ophthalmia	...	101	101	101	...	...
Metria	...	1	1	...	1	...
Furunculus	...	2	2	2	...	...
Influenza	...	2	2	2	...	...
Dysenteria	...	27	27	19	8	...
Diarrhœa	...	66	66	64	2	...
Cholera Spss... ...	...	12	12	7	5	...
Rheumatism	...	15	15	15	...	...
Syphilis Prim ...	...	1	1	1	...	...
Syphilis Secund	...	4	4	4	...	...
Gonorrhœa	...	1	1	1	...	...
Scabies	...	3	3	3	...	...
Vermes b. Tænia Solium..	...	3	3	3	...	...
Anæmia	...	10	10	10	...	...
Scrofula	...	3	3	3	...	...
Phthisis Pul	...	1	1	...	1	...
Meningitis	...	1	1	1	...	...
Delirium Tremens ...	...	2	2	1	1	...
Epilepsia	...	2	2	2	...	...
Hysteria	...	2	2	2	...	...
Cephalæa	...	22	22	22	...	...
Otitis	...	2	2	2	...	...
Epistaxis	...	1	1	1	...	...
Asthma	...	4	4	4	...	...
Obstipatio	...	51	51	51	...	...
Dyspepsia...	...	164	164	164	...	...
Colica	...	20	20	20	...	...

rn of Women, from 1*st January* 1854 *to* 31*st December* 1863.—*(Continued.)*

STRENGTH 97.

DISEASES.	Remained.	Admitted.	Total treated.	Discharged.	Died.	Remaining.
Hæmorrhois	...	3	3	3	...	...
Splenitis	...	1	1	1	...	...
Hepatitis	...	18	18	15	3	...
Icterus	...	2	2	2	...	...
Hysteritis...	...	4	4	3	1	...
Tumor Ovarii ...	...	1	1	1	...	...
Ostitis	...	2	2	2	...	...
Psoriasis	...	1	1	1	...	...
Phlegmon	...	18	18	18	...	...
Paronychia	...	1	1	1	...	...
Abscessus	...	2	2	2	...	...
Ulcus...	...	10	10	10	...	...
Partus	...	308	308	304	4	...
Abortus	...	12	12	12	...	...
Paramenia	...	4	4	4	...	...
Amenorrhœa ...	...	...	...	...	...	...
Dysmenorrhœa	...	2	2	2	...	...
Leucorrhœa	...	4	4	4	...	...
Atrophia	...	65	65	65	...	...
Ambustio	...	1	1	1	...	...
Luxatura	...	1	1	1	...	...
Subluxatio	...	5	5	5	...	...
Fractura	...	...	...	...	...	...
Vulnus Incis... ...	...	1	1	1	...	...
Gestatio	...	3	3	2	1	...
Phlegmania Dolens...	...	1	1	1	...	...
Prolapsus Uteri	...	3	3	3	...	...
Bronchitis	...	41	41	41	...	...
Not diagnosed	...	14	14	14	...	...
Total	...	1,247	1,247	1,216	31	..
Percentage of sick to strength, per annum ...	...	...	128·66	...	...	.
Percentage of deaths to sick treated	...	...	2·48	..	...	
Percentage of deaths to strength	...	...	3·19	...	...	

E.

eturn of Children from 1*st Jan.* 1854 *to* 31*st Dec.* 1863.

STRENGTH 200.

DISEASES.	Remained.	Admitted.	Total treated.	Discharged.	Died.	Remaining.
ola	...	8	8	7	1	...
cella	...	8	8	8	...	...
illi	...	92	92	88	4	...
illitis	...	23	23	23	...	...
titis	...	18	18	18	...	...
ussis	...	4	4	3	...	...
Typhus	...	2	2	1	1	...
Intermittens	...	141	141	141	...	...
Remittens	...	14	14	11	3	...
Continua	...	134	134	127	7	...
halmia	...	505	505	505	...	...
ipelas	...	1	1	...	1	...
nculus	...	1	1	1	...	...
nteria	...	53	53	29	24	...
rhœa	...	276	276	260	16	...
era Spas	...	25	25	3	22	...
matism	...	3	3	3	...	...
rrhœa	...	4	4	4	...	...
thæ	...	1	1	1	...	...
ies	...	46	46	46	...	...
ea b. Tænia Solium	...	21	21	20	1	...
acunculus	...	3	3	3	...	...
mia	...	3	3	3	...	...
sarca	...	2	2	1	1	...
ula	...	6	6	3	3	...
rculosis Mesenterica	...	8	8	2	6	...
psia	...	1	1	1	...	...
ulsio	...	10	10	3	7	...
alsea	...	2	2	2	...	...
algia	...	2	2	2	...	...
s	...	4	4	4	...	...
chitis	...	215	215	210	5	...
monia	...	3	3	2	1	...
nche-trachealis	...	3	3	2	1	...
itis	...	1	1	1	...	...
patio	...	21	21	21	...	...
a	...	1	1	1	...	...
epsia	...	45	45	45	...	...

Return of Children from 1*st Jan.* 1854 *to* 31*st December* 1863.—(*Continued.*)

STRENGTH 200.

DISEASES.	Remained.	Admitted.	Total treated.	Discharged.	Died.	Remaining.
Colica	...	5	5	5	...	...
Splenitis	...	2	2	2	...	...
Hepatitis	...	3	3	3	...	...
Icterus	...	7	7	6	1	...
Nephria	...	1	1	1	...	...
Contractura	...	2	2	2	...	...
Ostitis	...	1	1	1	...	...
Urticaria	...	1	1	1	...	...
Eczema	...	5	5	5	...	...
Herpes	...	4	4	4	...	...
Psoriasis	...	8	8	8	...	...
Phlegmon...	...	37	37	37	...	...
Paronychia	...	2	2	2	...	...
Ulcus	...	8	8	7	1	...
Prematurus Natus ...	...	1	1	...	1	...
Dentitio	...	65	65	52	13	...
Atrophia	...	20	20	14	6	...
Ambustio...	...	4	14	14	...	...
Explosio	...	1	1	1	...	...
Insolatio	...	1	1	...	1	...
Asphyxia	...	1	1	...	1	...
Luxatura	...	2	2	2	...	...
Subluxatio	...	8	8	8	...	...
Fractura	...	8	8	7	1	...
Contusio	...	22	22	22	...	...
Vulnus Incis	...	5	5	5	...	...
Hydrocephalus ...	...	11	11	3	8	...
Tumores	...	4	4	4	...	...
Vaccinia	...	15	15	15	...	...
Leucorrhœa	...	3	3	3	...	...
Total	...	1,987	1,987	1,849	138	...
Percentage of sick to strength, per annum....	...	...	99·35	...	...	...
Percentage of deaths to sick treated	...	...	6·94	...	...	...
Percentage of deaths to strength	...	...	6·90	...	...	...

H.

Number of Deaths from Zymotic Diseases at each of the above places and on the march.

Zymotic Diseases.	Jackatallah.	Trichinopoly.	Cannanore.	Malliapooram.	Calicut.	Bellary.	Ramandroog.	Dharwar.	Shorapore.	Nurgoond.	Hyderabad.	Poonamallee.	Depôts at Khandalla, Madras, and Arcot.	On the different marches.
Febris Typhus	1	...	...	...	...	2	...	...	...	...	...	...	...	...
Do. Intermittens	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Do. Remittens	...	...	...	...	...	...	...	1	...	...	...	...	1	...
Do. Continua	4	...	...	...	...	2	...	...	...	1	1	2	...	3
Dysenteria...	16	5	5	4	1	13	...	...	...	1	...	...	1	1
Diarrhœa	6	...	...	...	...	5	...	...	...	...	...	...	...	...
Cholera	...	3	...	...	...	24	2	...	...	...	...	...	4	29
Syphilis Secund	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ebriositas	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Total...	28	8	5	4	1	47	3	1	...	2	1	2	6	33
Total deaths from all Diseases...	53	12	13	8	2	101	8	1	0	3	2	11	9	51
Percentage of deaths from Zymotic Diseases...	52·83	66·66	38 46	50·0	50·0	46·53	37·5	100 0	0·0	6·66	50·0	18·18	66 66	64 51

L.

Invalided at the undermentioned places with period of residence.

Years of residence.	Jackatalla.	Cannanore.	Bellary.
	Right Wing.	Left Wing.	The whole Regt.
Within the 1st year	11	14	46
Do. 2nd do.	19	26	57
Do. 3rd do.	15	13	50
Do. 4th do.	26	...	63
Do. 5th do.	At Bellary.	...	141
Do. 6th do.	Do.	...	29
Do. 7th do.	Do.	...	...
Do. 8th do.	Do.	...	...
Do. 9th do.	Do.	...	...
Do. 10th do.	Do.	...	...

R.

Recruits when joined—Age—Defects.

DATES JOINED ON.	AGE.							DEFECTS.																				
	Under 20 years.	20 to 25 years.	25 to 30 years.	30 to 35 years.	35 to 40 years.	40 and upwards.	TOTAL.	Fracture.	Marks of Ulcers.	Deformities of toes, feet, elbows, &c.	Defective vision.	Marked with letter D.	Buboes.	Enlarged testis, Hernia, &c.	Curvature of Spine.	Varicose veins.	Idiocy.	Scrofula.	Tumors.	Paralytic.	Hæmorrhois.	Deafness.	Old age.	Narrow chest.	Marks of treatment.	Tumultuous action of Heart.	Under age.	TOTAL.
22nd February 1856....................	9	5	2	3	0	0	19	1	1	6	3	1	2	3	1	0	1	0	0	0	0	0	0	0	0	0	0	19
26th March 1859........................	8	8	4	0	0	0	20	1	8	3	1	0	1	2	0	0	0	3	1	0	0	0	0	0	0	0	0	20
20th June 1859.	10	6	0	0	0	0	16	0	3	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	11
3rd November 1860.....................	91	28	13	2	2	0	136	1	27	11	0	5	6	6	1	0	0	5	1	0	1	4	2	3	5	1	0	79
4th February 1862.....................	64	9	5	1	0	0	79	0	10	15	1	4	5	1	3	1	1	3	0	1	0	0	0	1	6	0	1	53
Total...	182	56	24	6	2	0	270	3	49	39	6	12	14	12	5	1	2	11	3	1	1	4	2	4	11	1	1	182

S.

Result of the above.

DATES JOINED.	Invalided.	Sent to Ramandroog.	Died.	Fit for duty.	STATIONS.
22nd February 1856	2	...	2	15	Jackatalla.
26th March 1859	1	2	...	17	Bellary.
20th June 1859	2	1	3	10	Do.
3rd November 1860	10	35	3	88	Do.
4th February 1862	16	29	3	31	Do.
Total...	31	67	11	161	

Y.

of Occurrences and Appendix, giving at a glance all the information contained in the Tables.

	Per annum		Per annum
ENTAGE OF SICK TO		On the different marches...	1·74
STRENGTH.		Cannanore ...	1·66
inopoly ...	194·85	Bellary ...	1·52
anore ...	181·72	Shorapore ...	1·53
war ...	156·52	Dharwar ...	0·54
oond ...	123·52	Calicut ...	0·49
indroog ...	114·3	INVALIDED PER CENT. TO	
pore ...	109·27	STRENGTH.	
ry ...	108·02	Bellary ...	7·38
apooram ...	106·97	Cannanore ...	6·81
amallce ...	93·36	Jackatalla ...	4 29
rabad ...	92 67		
talla ...	77·32	PERCENTAGE OF DEATHS	
ut ...	70·93	FROM ZYMOTIC DISEASES.	
ne different marches...	14·97	Dharwar ...	100·0
ts at Khandalla, Ma-		Trichinopoly ...	66 66
as, and Arcot ...	8·33	Depôts at Khandalla, Ma-	
ENTAGE OF DEATHS TO		dras, and Arcot ...	66·66
SICK.		On the different marches..	64·51
ts at Khandalla, Ma-		Jackatalla ...	52·83
as, and Arcot ...	30·0	Mulliapooram ...	50·0
ne different marches ..	9·83	Calicut ...	50·0
oond ...	7·14	Hyderabad ...	50·0
talla ...	3·90	Bellary ...	46 53
amallee ...	3 55	Cannanore ...	38·46
androog ...	2·83	Ramandroog ...	37·5
rabad ...	2·57	Poonamallee ...	18·18
apooram ...	2·08	Nurgoond ...	6·66
ry ...	1·64	Shorapore ...	0·0
inopoly ...	1·62	PERCENTAGE OF SYPHILITIC	
apore ...	1·06	CASES TO STRENGTH.	
anore ...	0·92	Cannanore ...	37 32
ut ...	0·69	Bellary ...	22·53
war ...	0·34	Jackatalla ...	11 85
ENTAGE OF DEATHS TO		PERCENTAGE OF SYPHILITIC	
STRENGTH.		CASES TO TOTAL ADMISSIONS.	
goond ...	8·82	Bellary ...	20·69
amallee ...	3·66	Cannanore ...	20·53
androog ...	3 45	Jackatalla ...	15·32
atalla ...	3·20	DURATION OF THE DISEASE	
inopoly ...	3·16	AT EACH OF THE ABOVE	
ts at Khandalla, Ma-		STATIONS.	
a, and Arcot ...	2·50	Cannanore days	30·74
erabad ...	2·37	Jackatalla ...	25·2
iapooram ...	2·20	Bellary ...	24·9

Z.

Order of Occurrences and Appendix, &c.

	Per annum.
PERCENTAGE OF SICK TO STRENGTH.	
Detachment from Madras by Sea to Tranquebar and Trichinopoly	448·74
Head Quarters by do. to do.	370·97
Detachment from Bellary to Coopul and back	233·28
Two flank Companies from Trichinopoly to Jackatalla	2[illegible]5·34
Detachment from do. to do.	202·2
Left Wing from Jackatalla to Cannanore	175·43
The Hyderabad Detachment back to Bellary	124·06
Head Quarters from Trichinopoly to Jackatalla	103·43
Colonel Spottiswoode's flying Brigade from Bellary to Hyderabad	84·12
Left Wing from Cannanore to Bellary	66·99
Kurnool Movable Column	49·74
Detachment from Jackatalla to Bellary	48·0
Head Quarters from do. to do	13·79
Detachment from Cannanore to Mulliapooram	0·0
„ against Moplahs	0·0
„ from Cannanore to Calicut	0·0
Captain Falconer's Detachment from Bellary to Dharwar	0·0
Detachment to Poonamallee	0·0
PERCENTAGE OF DEATHS TO SICK.	
Detachment from Trichinopoly to Jackatalla	39·13
„ „ Madras by Sea to Trichinopoly	29·21
„ „ Bellary to Coopul	7·14
Two flank Companies from Trichinopoly to Jackatalla	6·25
Head Quarters from Trichinopoly to Jackatalla	4·54
Colonel Spottiswoode's flying Brigade from Bellary to Hyderabad	2·77
Kurnool Movable Column	2·26
Head Quarters by Sea to Trichinopoly	2·04
The Hyderabad Detachment back to Bellary	0·21
Detachment to Poonamallee	0·0
Left Wing from Jackatalla to Cannanore	0·0
Do. from Cannanore to Bellary	0·0
Detachment from Cannanore to Mulliapooram	0·0
Do. do. do. to Calicut	0·0
Head Quarters from Jackatalla to Bellary	0·0
Captain Falconer's Detachment from Bellary to Dharwar	0·0
Detachment from Jackatalla to Bellary	0·0
„ against Moplahs	0·0

Order of Occurrences and Appendix, &c.—Continued.

PERCENTAGE OF DEATHS TO STRENGTH.	Per annum.
etachment from Madras by Sea to Tranquebar and Trichinopoly	131·09
Do. from do. to do	78·96
Do. against Moplahs	50·0
Do. from Cannanore to Mulliapooram	27·99
Do. do. Bellary to Coopul	16·66
aptain Falconer's Detachment from Bellary to Dharwar ...	13·04
wo flank Companies from Trichinopoly to Jackatalla ...	12·83
lead Quarters from Madras by Sea to Tranquebar and Trichinopoly	7·57
)o. do. from Trichinopoly to Jackatalla	7·57
eft Wing from Jackatalla to Cannanore	7·01
Do. from Cannanore to Bellary	2·37
olonel Spottiswoode's flying Brigade to Hyderabad ...	2·33
urnool Movable Column	1·12
he Hyderabad Detachment back to Bellary	0·27
)etachment to Poonamallee	0·2
Do. from Cannanore to Calicut	0·0
lead Quarters from Jackatalla to Bellary	0·0
)etachment from Jackatalla to Bellary	0·0

(Signed) J. MACBETH, M. D.,
Surgeon Major H. M. 74th Highlanders.

NOTE.—We have printed the foregoing report as an teresting document containing the opinions of a Medical fficer of great experience in India, of the value of a Hill imate to European soldiers. The Report was accomnied by many more tables than we have been able to ake room for; we have, therefore, omitted those that peared to us scarcely necessary to thoroughly illustrate the guments adduced. But we here give the headings and me particulars of those tables which we have omitted.

.—Return of Officers, from January 1854 to December 31st, 1863. Strength, 56—81.
Total treated, 386. Discharged, 377. Died, 9.
Percentage of Deaths to Strength per annum, 3·35.

.—Return of men who remained all the time at Jackatalla and those who remained in the plains.

.—Sickness and Mortality on the march of the various detachments, &c., of the Corps.

I.—Mortality according to Age in the Corps.

Under 20 years....11. From 20 to 25...... 68.
From 25 to 30....70. „ 30 to 35.......60.
„ 35 to 40....47. „ 40 & upwards, 19.
Total, 275.

J.—Mortality according to Service in the Corps.

K.—Diseases or Causes of Mortality in the Corps, according to service at the undermentioned places.

M.—Invalided at the undermentioned places, with length of service.

N.—Causes invalided from at the undermentioned places.

O.—A list of volunteers from other Corps, showing age, length of service, and date of arrival. Total, 294.

Under 30 years of age...97. Above 30 years of age...197.
„ 10 do. service...81. „ 10 „ service...213.

P.—Of the above, were invalids—120.

Under 35 years of age...15. Above 35 years of age...105.
„ 10 „ service....12. „ 10 „ service...108.

Q.—Deaths of the above occurred from the following diseases.

T.—Number married and unmarried.

	Average. strength.	Died.	Per cent. per annum.
Married.............	97	39	............4·628.
Unmarried..........	796	236	............2·964.

U.—Number of syphilitic cases, with periods and strength at the undermentioned places.

V.—Result of the above.

W.—Of the above were married and single, showing diminution or increase on long residence.

X.—Average number of days each patient admitted into Hospital (all diseases) had been under treatment at the undermentioned places—

	Days.
Jackatalla....................	11·08.
Cannanore.........	13·36.
Bellary................	18·56.

PART II.

REVIEWS AND NOTICES OF BOOKS.

A Hand-book of Uterine Therapeutics. By EDWARD JOHN TILT, M.D., Member of the Royal College of Physicians, &c. &c. Second Edition. London: JOHN CHURCHILL AND SONS. 1864. Foolscap, 8vo., pp. 318.

IN the seventh volume of this journal, we reviewed at some length the first edition of Dr. Tilt's Hand-book. We were somewhat amused to find that the concluding paragraph of that review,—one of the very few which are at all laudatory,—is printed at the end of the present edition among the " Opinions of the Press." A compliment of this kind to a Colonial Editor naturally caused a reference to the new edition of the work with a view to discovery of any emendations therein, and to observe whether any notice had been taken of previous censures.

This reference has proved that Dr. Tilt has shown marked respect to our strictures. He has left out the possession of "good looks" as essential to the success of an obstetrician; he has altogether omitted the very objectionable phrase "the occasional use of matrimony;" and he has so modified his account of Recamier's feat in Hysteria, as to allow it to be clearly understood who was cured by " the maid sitting on her mistress's belly."

There can be no doubt that this edition has undergone a careful revision, and with advantage. There are still some points upon which we would join issue with Dr. Tilt, but, upon the whole, we can recommend the book as containing, within moderate compass, a fair account of the therapeutic measures available in the treatment of uterine affections. There is a formulary at the end of the work to which the practitioner may refer with probable benefit. We fully agree with Dr. Tilt in his condemnation of unguents as generally prepared. Glycerine is a much more manageable and cleanly menstruum than hog's lard or oil, and Dr. Tilt gives several useful formulæ in which glycerine is substituted for fatty matters.

A Clinical Memoir on certain Diseases of the Eye and Ear, consequent on Inherited Syphilis ; with an appended Chapter of Commentaries on the Transmission of Syphilis from Parent to Offspring, and its more remote Consequences. By JONATHAN HUTCHINSON, F.R.C.S., Senior Assistant Surgeon and Lecturer on Surgery at the London Hospital, &c. &c. London : John Churchill, 1863. 8vo. pp. 259.

MR. HUTCHINSON's name has for years been before the profession as one of its ablest practitioners, as a sound, practical Surgeon, and as an earnest worker in the field of pathological science. Anything emanating from such a man must command the greatest respect.

The receipt of the book with the title given above was announced in the number of this journal for February 1864, and had it not been for the illness and want of leisure of the late Editor which eventuated in a most unfortunate irregularity in the issue of the journal, a notice of the work would have appeared before this time.

It is somewhat late in the day to enter upon a review of a treatise published more than two years ago, which has now become a standard work, and which is most probably in the hands of many of our readers. We do not, therefore, purpose to enter upon any lengthened notice, but simply to give a short analysis of the contents, with a view of inducing those of our readers who have not hitherto done so to enter upon a study of the very important subject treated of in this work, which is most correctly entitled, and is a perfect model of, "a Clinical Memoir."

Those who habitually peruse the reports of the Pathological Society of London, published in the weekly medical journals, will remember that several communications were made by Mr. Hutchinson in 1857-8-9, upon the condition of the permanent upper central incisor teeth as among the most reliable indications of inherited syphilitic taint. And about the same time, the relation of inherited taint to diseases of the eye was studied by our author, and the correctness of his careful observations and cautiously propounded views was confirmed by the ablest ophthalmologists.

Hutchinson says in his preface :—

iat 'Chronic Interstitial Keratitis' is essentially an heredito-
tic disease, and that dental peculiarities, of a certain kind, are,
autiously examined, a reliable indication of inherited taint,
leed, the principal assertions met with in the following pages.
oth should be received with incredulity by those who have
d large opportunities for examining the facts, is what ought
ly to be expected but strongly desired."

d he adds in a note :—

› any one inclined to test the correctness of these assertions,
ld beg respectfully to insist on the necessity for great cau-
ıd attention to detail. In many cases with which I have been
ıcquainted, and which have been believed to be exceptional to
ws, mistakes have been made as to the character of the dental
mations, the set of teeth affected, or the special form of
lmia. I cannot too strongly urge that I am in no way responsi-
diagnostic errors consequent upon inattention to my descrip-
I should not make this remark, were it not that the subject is
great importance, and that I am very desirous not to mislead
ıe hasty."

› first chapter contains an account of twenty-three cases
is dependent upon hereditary syphilis. Mr. Hutchin-
aims no credit upon the recognition of the taint in
cases. Mr. Lawrence recognized it, and so have many
observers. There is a summary of the cases given,
'ed by a series of aphorisms, from which we gather :

t the period of life at which syphilitic iritis occurs in
s is about the fifth month after birth ;

t the subjects of the disease always show one or more
well-recognized symptoms of hereditary taint ;

t most of them are infants born within a short period
date of the primary disease in the parents ; and

t mercury is signally efficacious in curing the disease.

› second chapter treats of Chronic Interstitial Keratitis.
ıundred and two cases are reported, and a summary
omments are given. We learn from the latter :

t in a very large proportion of cases this form of kera-
occurs in patients between the ages of 8 and 15 years ;

t from its being a well-marked and peculiar form of
almia, it is *á priori* probable that it acknowledges one
› and definite cause ;

that its subjects almost invariably have their upper central incisor-teeth, of the permanent set, dwarfed and notched in a peculiar and characteristic manner ;

that, when inquiries have been made, in a large proportion of cases, one or other parent has confessed to having suffered from constitutional syphilis prior to the birth of the patient ;

that recovery is slow and at the best imperfect, and the earlier a case is brought under treatment the more favourable the prognosis ; and

that the most successful treatment consists of the cautious use of mercurials and iodides, at the same time supporting the system by tonics and a liberal diet.

The third chapter contains an account of Inflammations of the Choroid and Retina dependent upon inherited syphilis. These cases are generally attendant upon the corneal disease. The changes chiefly involve the choroid, but are seldom limited to it. Free effusions of lymph into the substance of the membrane occur, and the retina often becomes detached. Fourteen cases are recorded, showing that there are various stages and degrees of severity of the disease.

Chapter iv. treats of Cataract and Inflammation of the Vitreous Body in connection with inherited syphilis. Mr. Hutchinson acknowledges that more accurate and extended data are required upon this section of his subject. He relates three cases of Cataract, in one of which, aged 20, there were typical teeth ; in the second, aged 14, the girl was known to be the subject of inherited syphilis ; and in the third, aged 3, there was a full history of syphilis in the parents.

The fifth chapter is on the so-called Aquo-Capsulitis, a term which our author says is alike barbarous in its terminology and erroneous in the anatomical theory which it suggests. He thinks that there can be no doubt that a large majority of the affections hitherto classed as cases of "Aquo-Capsulitis," or cases in which both iris and cornea are slightly inflamed, are due to hereditary syphilis. These cases are generally associated with interstitial Keratitis ; true "Aquo-Capsulitis" is rarely seen, and when observed there is seldom any reason for suspecting hereditary syphilis.

We next have an account of Amaurosis with White Atrophy of the Optic Nerves in connection with inherited syphilis. Mr. Hutchinson relates seven cases ; in five of which there could be no doubt as to the history, and in the other two the diagnosis of hereditary taint was not conclusive. He says :—

> "These cases are, however, quite sufficient to awaken our suspicions, and to induce us, in the event of meeting with atrophic changes of the nerve in young persons, to make special investigations as to the possible existence of a syphilitic diathesis."

The seventh chapter is devoted to the consideration of Deafness in connection with inherited syphilis :—

> "In some cases of deaf syphilitic patients, the history is given of otorrhœa, pain, &c., and other evidences of external inflammation, in others no such symptoms have been present.
>
> "A form of deafness which occurs in these patients and which, as far as what little observation I have made on the subject goes, appears to be peculiar to them, is one in which the function fails without any external disease. It is usually symmetrical. Not unusually its stages are rapidly passed through, and a patient who six months ago could hear almost perfectly, becomes—without otorrhœa and without any marked degree of pain—utterly deaf."

Twenty-one cases are related, and in the general comments it is observed that all of the cases in which the ears were inspected go to support the belief that the deafness of syphilitic children is due either to disease of the nerve itself or to some changes in non-accessible parts of the auditory apparatus. Its symmetry in all the cases would point to a central cause. The prognosis is very unfavourable.

We extract the introductory paragraph of chapter viii. on Diseases of the Ocular Appendages when dependent upon hereditary syphilis :—

> "The wish to notice in this work all the affections of the eye and its appendages, which I have hitherto observed in connexion with inherited syphilis, induces me to devote a short chapter to diseases of the lids, the lachrymal sac, and the palpebral conjunctivæ. None of these affections are by any means peculiar to the subjects of hereditary taint. Of Iritis, Choroiditis, Kerato-iritis, and Interstitial Keratitis, as met with in infants and young persons, I venture the assertion that in a vast majority of instances, they are directly due to that cause. With tinea tarsi, etc., however, it is wholly different, they are very commonly simple affections, and very rarely syphilitic."

A chapter of miscellaneous cases, eleven in number, follows. These are cases of ocular disease in which other symptoms of inherited syphilis were present, and which determined the diagnosis.

The tenth chapter is entitled "On the means of recognition of the subjects of heredito-syphilis during the tertiary stage." It is impossible to epitomize it with any advantage to our readers, so we must refer them to the work itself.

And the body of the work is concluded by seventy-three aphorisms and commentaries respecting constitutional syphilis and its transmission from parent to offspring. Want of space alone prevents our printing these aphorisms verbatim.

An appendix follows containing a report on Choroiditis, Retinitis, &c., as met with in connection with acquired syphilis.

The book is illustrated by two beautifully executed Chromolithographic plates, showing the appearances presented in some stages of keratitis, and the syphilitic malformations of the permanent teeth.

We most cordially recommend this book to the serious attention of all those who have not hitherto made themselves acquainted with it.

On the Nature, Pathology and Treatment of Puerperal Convulsions. By RICHARD HODGES, M.D., F. R. C. S., Author of "An Essay on Uterine Hæmorrhage." London: Churchill and Sons, 1864. Small 8vo., pp. 96.

IN a preface, the author of this little book requests "every indulgence for the many imperfections and omissions contained in the accompanying essay, and he asks this for the reason that he has always been actively engaged in an extensive and wide-spread practice, and never, consequently, accustomed to the desirable art of expressing in writing that which he has seen." We are quite willing to grant the indulgence sought, though we are unwilling to acknowledge that the art of perspicuity in writing is a simple matter of habit. There are many people who write copiously without conveying any clear idea of what they really wish to say; and, on the other hand, there are many who seldom "rush into print," but, nevertheless, whenever they are tempted to do so, display no want of knowledge of their native tongue.

We do not intend to enter upon any criticism of this essay; its principal object is to impress upon the members of the profession that there is but one suitable or successful treatment of true puerperal convulsions (by which term Dr. Hodges understands the simple epileptic form), viz., early and free venæsection, followed by cold to the head and purgatives. The management of cases occurring in weakly women requires some modification, as does also the treatment of convulsions occurring as the result of hæmorrhage; these matters are lightly touched upon.

The consideration of the influence of emotion as an exciting cause of puerperal convulsions gives opportunity for the introduction of the following loyal paragraph:—

> "The death of the Princess Charlotte, in 1817, from convulsions occurring after a tedious labour, depending on the arrest of the head of the fœtus in a pelvis below the average capacity, contributed powerfully to the development of the disease in many ladies, and through the powerful influence of emotion; for, within a short time of this event, many women went into labour under the influence of much fear or terror, and suffered likewise from convulsions—and puerperal convulsions were unusually prevalent at that time throughout the land, being certainly the evident result of the sad event which in that day was felt as a grief at every fireside. How grateful should we all feel at the recent safe and happy delivery of Her Royal Highness the Princess Alexandra, and that there did not arise in her case a complication so frightful—for, if there had been, unfortunately, this most fearful disease in connexion with the event, such a trial would not have been limited to the Palace, but would have extended its influence to many a home, thousands of miles away, perhaps; and saddened many a heart through the mysterious, yet effectual, influence the mind has upon the body."

The above is a fair specimen of the author's style. Had he taken care to avoid unnecessary repetition and to keep to the proper subject-matter of each division of his essay, it need not have occupied more than one-half the space it now does.

We are to avoid criticism, so we must presume that when Dr. Hodges speaks of "spasmodic constriction of the smaller and distant capillaries," (page 54) the word *capillaries* is a misprint for *arteries.*

This essay is in one respect the reverse of the treatise noticed in the previous article, for it is written from the *recollection* of cases, and although a few particular instances of puerperal convulsions are shortly related, the details are evidently not drawn from any regularly recorded observations.

Report on Vaccination throughout the Presidency and Provinces of Madras, in the year 1864. Selections from the Records of the Madras Government, No. lxxxiv. Madras: Gantz Brothers, 1865. 8vo., pp. 39.

THE Principal Inspector General of the Medical Department, in a letter introductory to the extract from local reports, observes that:

"The operations of the department have been quite as unsatisfactory as on previous occasions."

During the year 1864, 3,11,587 persons are reported to have been vaccinated, a decrease of 7,237 on the previous year.

Dr. Cole notices that "it is very questionable how far the figures are reliable," and when we find that in some districts the per-centage of unsuccessful to successful cases is reported to be 0·96, 1·20, 2·30, 2·70, &c., we are not surprised at the remarks of the Governor in Council, that:—

"The extracts, appended to the foregoing letter, from the Annual Reports of the Medical Officers on the working of the Vaccine Department during the year 1864, go far to show that the returns sent in by the Vaccinators are, in most cases, not to be relied on."

We trust that the newly organized Vaccine department, under the energetic superintendence of Dr. Shortt, will submit much more reliable returns, and show far more satisfactory results than hitherto has been the case.

A Popular Lecture on Vaccination. By JOHN SHORTT, M. D., F. L. S., M. R. C. P. L., &c., General Superintendent of Vaccination. Madras : Gantz Brothers, 1865. 8vo., pp. 14.

THIS pamphlet is a laudable attempt on the part of the zealous General Superintendent of Vaccination for the Madras Presidency, to impress upon the community the certainty that by the practice of so simple and harmless an operation as vaccination, they may ensure an immunity from the ravages of one of the most terribly fatal, disgusting, and disfiguring diseases to which the human race is liable.

Dr. Shortt appears to have very satisfactorily performed the task which he set himself ; of course, the subject is one upon which there is nothing new to be said.

He very properly points out that the Mortuary Reports of Madras for 1859 show that the East Indian community had in that year a greater per-centage of deaths from small-pox than the Mahomedans, and he fearlessly tells them that " it is highly discreditable to them, that, rejoicing as they do in the benefits of Christianity, they should be more neglectful of this wonderful provision of Providence than the Mahomedan fatalist."

The lecture has been delivered in the Hindustani and Tamil languages by Dr. Shortt, and he has also prepared a Telugu edition. The Hindustani edition has been published by Syed Abdossutter Saneen, at his own expense, for gratuitous distribution amongst his co-religionists ; and the Tamil edition has found a publisher in the person of M. Parthasarthy Iyengar, B. A.

There is an appendix to the pamphlet containing a letter from Dr. Shortt to the head of the Medical Department, from which we obtain the above particulars, and in which it is recommended that the lectures should be freely circulated, and also introduced into the different schools as containing a brief and easily comprehended account of the benefits conferred by vaccination.

A reference to the Director of Public Instruction was ordered by Government, and that officer felt unable to recomnd the introduction of the lecture as a text book into ›vernment schools ; first, because it would be injurious to und systematic instruction to introduce into schools a little ımphlet upon each point upon which it would be well for ae people to possess correct views ; and secondly, even were ,uch a course desirable, the lecture does not seem appropriate for the purpose.

However, Mr. Powell recommends that a few copies be placed in the Library of each of the Provincial and Zillah schools, and the perusal of the work be encouraged by causing the senior scholars each year to write upon the importance of vaccination.

The Governor in Council concurs in the opinion expressed by the Director of Public Instruction.

And we can only add that Mr. Powell's argument appears to us as undeniable as his suggestion, of encouraging these upon the subject, is judicious.

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*Surgery in Bengal: an Address to the Bengal Branch o*ſ *the British Medical Association.* BY J. FAYRER, M.D., F. R. S. E., and F. R. C. S. E., Professor of Surgery, and Surgeon to the Medical College Hospital. Calcutta: Cutter, 1865. 8vo. pp. 32.

AN able address written with the object of showing that "Surgery and Surgical Pathology have not suffered in the hands of Indian Surgeons." By the term "Indian Surgeons," Professor Fayrer designates both Native and European Surgeons practising in India, and with reference to Native Surgeons, it is scarcely necessary to say that h alludes to those only who have thoroughly grasped th science of medicine as it is taught in Europe, and wh have learned to practice with success the boldest operatio in Surgery.

Professor Fayrer refers to the various Indian Med ournals as a proof that India has fairly contributed share to the annals of Surgery and Pathology, but he adds:—

"I will venture to say that you would have difficulty in adducing even a casual reference in any of the standard works professing to treat exhaustively of their respective subjects, to the authority, practice, or opinion of one Indian Surgeon.

"Let us take the operation of lithotomy, for example. The most elaborate description of all points, pathological, anatomical, chemical, or surgical, concerned in the disease for which this operation is performed; the fullest details, statistical and descriptive, of the proceedings and opinions of British and Continental Surgeons of eminence, who have been interested in, or distinguished for, their investigation or skill in operating for this grievous disease; every fact, in short, that could be collected, carefully collated and recorded, yet, not a word on the subject as it relates to India, where we count our operations by hundreds, I may say, and where some of our graduates have cut as many men successfully for stone as the greatest lithotomists Europe ever saw.

"Let me not be charged with exaggeration: I may refer to my friend Baboo Ram Narain's experience, who, within a period of 12 years, in the stations of Cawnpore and Budaôn, operated upwards of 200 times with a loss of 7 cases. Or, as an equally good illustration of the opportunities afforded, and the mode in which they are taken advantage of, I might adduce a recent donation of 17 large vesical calculi, presented to the College Museum by a Graduate whose degree is not yet a year old, removed by him, at the station of Pind Dadun Khan, within six months after joining his appointment. And I might refer to the names of O'Shaughnessy, Brett, Webb, Playfair, Naismith, Aitcheson, Partridge, Cayley and others, as of Surgeons who have had experience in this operation, that scarcely the Frere Jacques, Rau, or Cheselden ever exceeded."

We do not for a moment doubt that all this is very true, but we question whether the non-reference to the experience of Indian Surgeons is not partly due to the fact that the records of it are scarcely accessible to the authors of standard works, as they are but sparsely to be found even in the Indian Medical Journals, and are probably chiefly locked up among the archives of the late Medical Boards. Professor Fayrer supports his position that Surgery is extensively and successfully practised in India by giving the following table, the information contained in which he has been permitted to collect from the official records of the various stations.

Abstract of important Surgical Operations performed in the last six months of 1863 *in* 180 *Hosp*
Dispensaries in the Bengal Presidency.

PROVINCES.	No. of Dispensaries or Hospitals.	Number treated in Dispensary or Hospital.	Amputations.	Deaths.	Lithotamy.	Deaths.	Lithority.	Deaths.	Ligature of Arteries.	Deaths.	Removal of Tumours.	Deaths.	Scrotal Tumours.	Deaths.	Strangulated Hernia.	Deaths.	Radical Hernia.	Deaths.	Excision of Joints.	Deaths.	Trephining.	Deaths.	Plastic Operation.	Deaths.	Cancer.	Deaths.	Perineal Section.	Deaths.
Bengal	54	101,746	30	3	43	4	...	..	...	..	39	..	16	..	1	1	2	..	2	..	2	2	...	..	3	..	1	..
Calcutta.. ..		165,424	22	11	25	4	..	...	1	..	113	...	29	2	7	2	5	...	..	...	..	..	...	...	3	...	11	3
		267,170	52	14	68	8	..	..	1	..	152	..	45	2	8	3	7	...	2	..	2	2	..	..	6	..	12	3
North-West and Central Provinces.	89	271,816	40	6	330	25	1	1	..	..	99	...	1	...	..	..	2	1	3	..	..	..	2	..	6	3	4	..
Burmah	2	1,563	1	..	1	1	...	...	..	..	3	..	..	..	..	..	...	..	1	..	..	...	...	..	...	..	..	..
Punjab	35	110,316	22	6	224	31	..	..	..	..	31	..	..	..	2	..	..	..	1	..	1	1	1	..	2	...	1	..
		383,695	63	12	555	57	1	1	..	...	133	..	1	..	2	..	2	1	5	..	1	1	3	..	8	3	5	..
Grand Total..	180	650,865	115	26	623	65	1	1	1	...	285	...	46	2	10	3	9	1	7	..	3	3	3	..	14	3	17	3

The lecturer next addresses himself to the subject of Hospitals in India, and we regret that he is obliged to acknowledge that, as regards Calcutta itself, the Hospitals are generally utterly defective in structure. We fear that in our Presidency too, we cannot boast of anything very encouraging in this respect.

The third subject-matter of Professor Fayrer's address is Pyæmia from osteo-myelitis, one of the frequent causes of death after amputation, or other injuries, or surgical operations involving section of bone. He relates the experience of his own practice in two years. Thirty-two amputations, all capital operations, (three secondary) with fourteen recoveries and fifteen deaths. Of the deaths, nine resulted from Pyæmia the consequence of osteo-myelitis, three from Pyæmia not the result of bone disease, and six from Tetanus, Gangrene, Exhaustion. The Professor enters fully into the subject of osteo-myelitis, quoting the opinions of Mr. Jules Roux of Toulon, with which in the main he agrees. But we must refer our readers for particulars to the address itself, which may be obtained at the Military Orphan Press, 6, Bankshall Street, Calcutta.

We have also before us a pamphlet of 13 pages, issued from the same press and containing a detailed account, by Dr. Fayrer, of a case of secondary amputation at the hip-joint on account of osteo-myelitis after primary amputation of the thigh. The case terminated in recovery, and it is highly creditable to the skill of the Surgeon who treated it. There is a curious typographical error running almost entirely through the report, viz., the addition of the sign ° (degree) to the numbers indicating the rate of the pulse.

PART III.

MEDICAL MISCELLANY.

No. 1.—*Rupture of the Abdominal Aorta, with remarks.*

By Lestock W. Stewart, Esq., Surgeon, 13th Regiment Native Infantry.

The following case of rupture of the abdominal aorta terminating fatally, appears worthy of record for two reasons, as it is hoped will appear in the sequel.

Rupture of so large and important a vessel as the abdominal aorta, as a matter of course, must have been fatal, and it seems almost superfluous to say that the case under consideration resulted in death. Still, as the case was a complicated one in connection with (it is presumed) a former rupture of a vessel of some consequence in the animal economy, the heading of the case may be considered reasonable.

Musician G. C., Æt. 27, was admitted into hospital on the 14th November 18—— complaining of pain in the left hypochondrium, in which situation a circumscribed lump or swelling was perceptible. There was slight increased heat in the part; skin natural; tongue clean; bowels rather costive.

The pain was of two or three days' standing, but on the day of the man's admission into hospital it was more severe, so much so that he stated he "*could stand it no longer.*" He found that by pulling the skin over the swelling he felt relief.

A few months previously, and before I joined the regiment (13th N. I.), this man suffered from a similar pain in the same situation.

On admission was ordered

Pulvis Jalapæ Co. ℨi.

Hirudines No. vii. to be applied over the seat of pain, and afterwards the part to be fomented.

Hydrarg Chloridi gr. iii.
Opii. gr. i. M. fiat pil.
to be taken every 3rd hour.

The next day (15th) he was no better, and his bowels had been only partially moved; ordered the following

Hyd. Chlor. gr. iii.
Ant. Pot. Tart. gr. ¼.
Opii. gr. ½ M. fiat. pil.
to be taken every 3rd hour.
Enema Purgans Statim.

On the 16th he complained of the pain being more severe and diffused. There was also some pulsation apparent in the swelling after visiting him in the morning of 15th, but on the 16th it became very perceptible. On auscultation the sound demonstrated clearly the existence of an aneurism, and the pulsations were sufficiently strong as to raise the hand when placed over the swelling. Bowels moved freely by the enema; tongue slightly dry; skin moist and cool; urine turbid and scanty; heat applied to it increased the turbidity, but nitric acid rendered it subsequently clear; pulse 140, small; countenance anxious.

℞. Magnes Sulph. ʒiv.
Æthr. Sulph. ʒi.
Tinct. Senna ʒiii. Inf. Senna ℥iss.
M. fiat Haustus Stat. Sumend.
Pulv. Digitalis gr. ii.
Ant. Pot. Tart. gr. ¼
Opii. gr. ½ M. fiat pil.

to be taken every 2nd hour; small quantities of nourishment to be given at intervals.

On the 17th the swelling had extended to the right side, though he expressed no sense of pain on pressure or percussion over that side. The whole swelling pulsated to a considerable extent.

Pulse 112; tongue rather dry; urine turbid, but becomes clear on applying heat; sp. gr. 1·22. Afraid to lie on either side, on account of the pain being increased.

℞. Tinct. Digitalis, ♏. xx.
Liq. Ant. Pot. Tart. ʒiii.
Spt. Etheris Nit. ʒi.
Mist. Camph. ℥i;
fiat Haustus.
to be given every 3rd hour.

At about 5 o'clock P.M. on the 17th, the Apothecary sent to me to say that the man became very restless. Pulse 120; skin cool, no pain; and at 6 P. M. he suddenly expired.

Autopsy made at 8 A. M. on the 18th.

On removing the thoracic and abdominal parieties, and turning over the sternum, the pericardium, liver, stomach, and small intestines were exposed.

A ligature was placed on the cardiac and œsophageal ends of the stomach, and the intestines carefully removed to one side, so as to ascertain the exact position of the ruptured aneurism.

Proceeding with the inspection on the left side, a large black looking mass, weighing upwards of three pounds, was observed to occupy the region of the left kidney. This was with some difficulty removed from the body, and on making a section through it, it was found to consist of semi-organized blood, with the left kidney half its natural size embedded in its centre. The coagulum had a very thin membranous covering, not in the least allied to the outer tunic of an artery. On raising the small intestines, a large quantity of fluid and partly coagulated blood was seen to occupy the abdominal cavity; and on still further removing the intestines, and reaching the vertebral column and aorta, a large sacculated opening was seen in the latter, between the splenic and renal arteries. In fact, this was the situation where the aneurismal tumour had ruptured, and discharged its contents into the abdominal cavity, when death almost immediately occurred.

From a review of this case, it would seem that a rupture of the renal or one of the Malpighian arteries took place on the occasion of this man's previous admission for pains in the region already described; but the blood being confined within the fibrous capsule of the kidney, could not escape, and thus became organized as has been stated. The kidney being thus confined within the large coagulated mass, gradually diminished in size, and no doubt altogether ceased to secrete any fluid.

I can in no other way account for the coagulum surrounding the left kidney, and if such be really the case, I think it is a solitary instance of the kind, and consequently worthy of note.

With regard to the progress of the aneurism which resulted in death, nothing further could have been done to avert such a climax. No surgical skill, in my opinion, could have saved my patient, and medicine could only alleviate.

The predisposing cause of aneurism in this case was disease of the arterial system. Around the edges of the rupture the artery was soft and pultaceous, or, in other words, atheromatous; and the exciting cause was, no doubt, violent exercise in the discharge of his duties as a Musician. His instrument was the Bassoon, which required considerable wind.

No. 2.—*Two cases of Cancer of the neck of the Uterus.* By John Shortt, M.D., F.L.S., M.R.C.P.L., &c., General Superintendent of Vaccination.

Case No. I.

In 18——, A B., Æt. 50, widow, East Indian, of French extraction, and a native of Pondicherry, a teacher of music by profession, sent for me to see her, as she was said to be dangerously ill at the time. The patient, I found, was an elderly-looking female, of obese habit of body, said to have had two children, one of whom, only a girl, now alive. She has been a widow for upwards of 25 years, and has hitherto been in the enjoyment of good health; but during the last 18 months (prior to which menstruation had long ceased), she became subject to an offensive leucorrheal discharge, soon followed by periodic floodings, and in the intervals, an ichorous discharge, staining her linen. Looks anæmic, with a peculiar expression of countenance, so expressive of malignant disease; suffers much from pricking and shooting pains in the pelvis. When seen, the patient was just recovering from an attack of flooding; countenance pale, with a tendency to wander, restless, pulse barely perceptible at the wrist; skin cold, and covered with perspiration, is apparently unconscious. Brandy and water, beef-tea, and other nutrients and diffusable stimulants were had recourse to, the vagina washed out with a cold saturated solution of alum lotion, and the passage plugged with bits of old cloth moistened in the same, arrested the flooding completely, and she began to revive.

On making a more careful examination a few days after, the cervix of the uterus was found degenerated into a cancerous mass, involving the surrounding tissues, and fixing the uterus immovably in its place.

The offensive discharge was moderated with disinfectant injections (Condy's fluid) and mineral astringents, and the general health supported by nutrients and mild stimulants, tonics, cod liver oil, &c., notwithstanding which the disease continued to progress, and the patient became completely exhausted, and sank 6 months after from exhaustation, consequent on a severe attack of flooding.

CASE NO. II.

C. D., Æt. 39, East Indian, of Scotch extraction; married; mother of 12 children, most of whom are now alive; of spare delicate make, but of late has been growing stout, with a pale, sickly, yellowish complexion, is of active habits, intelligent, and a careful, anxious mother. General health good, suffered from an attack of intermittent fever, and became the subject of splenitis for a time, after which she took cholera, but made a good recovery from a state of severe collapse, subsequently suffered from a sharp attack of mucous diarrhœa. In 18——, on the birth of her sixth child, suffered from post partum hæmorrhage, from which she recovered by the use of the cold douche, and again after her ninth child she suffered in a similar way. Subsequent to this had an attack of passive flooding for many days which weakened her a good deal, on recovery she was sent for a short change, which benefitted her greatly, and her general health subsequent to this was excellent, and she gave birth to three other children.

The patient gives the following account of herself. On the birth of my fourth child (a girl), soon after delivery, I was dressed, and wished to be shifted to another cot from the one I was confined on. A female friend, who was present on the occasion, of rather masculine proportions, undertook to do the needful. She carried me off the soiled and threw me on to a clean bed, which was alongside, with some force, that I immediately felt a severe pain in the left side of my womb. I felt at the time that the fall or throw had hurt me somehow, and I complained of it, and that pain never left me completely since. I always felt a soreness on that side of the womb, and could point out the exact locality where I felt the part weak and tender to smart pressure ever after.

In 18——, she left the country for England with her family having her 12th child in arms. In September of the following year, whilst spending the evening in her own house with a few friends, she was suddenly taken alarmingly ill, with severe flooding, and, to all appearance, was looked upon as dead, being cold and pulseless, and covered with clammy perspiration. With difficulty she was brought round. She had, previous to this, for some time, an offensive leucorrheal discharge, of which she did not complain nor notice. She continued to suffer from severe lumbar, sacral and abdominal pains, with a sense of bearing down and difficult defecation. The only time she obtained relief from these symptoms was during and some time after the floodings, which came on irregularly, varying at intervals of from three to six weeks, and always suddenly; large clots of blood used to come away on these occasions. Generally in the mornings she felt better, and, to all appearance, looked cheerful, but as the day advanced, she would be in agony from pain, and the offensive discharge continuing at the same time, and in the course of 3 or 4 hours the pains and discharge would abate as suddenly as they appeared, when the patient would become cheerful again. The vaginal discharge became extremely offensive, and she was never free from either the offensive discharge or flooding. The medical gentleman, who was now in attendance, found, as he stated, a polypus attached to the neck of the uterus which he removed. I, happening to be in England at the time, was called into consultation, and, on examination through the speculum, saw what appeared to me a broad surface of ulceration, about 2½ inches in diameter, with the edges everted, presenting a very suspicious appearance indeed; but some three months after, the disease advanced so rapidly, that an eminent obstetrician was consulted, who pronounced the disease a corroding cancer. The disease now rapidly ran its course, the whole of the neck of the uterus was converted into a cancerous mass, which soon involved the surrounding tissues, corroding through the rectum and vagina, and throwing these passages into one. Now, for the first time, the patient began to lose flesh, and her throat became affected, about six weeks prior to her death, when she scarcely spoke, complaining of her throat and inability to speak, she was slightly delirious, and sank gradually about 18 months after her first serious illness.

The treatment consisted of tonics and astringents, with stimulants and nutrients internally. Alum lotion, alum bath, Tinct. Ferri Sesquichloridi and other astringents and styptics were had recourse to externally.

Remarks.—The last case is of great interest, for there was no family tendency to cancer; in the patient's family, her mother, grand-mother, two maternal uncles, and two of the patient's brothers, were all alive and in the enjoyment of perfect health. Her father's family were also healthy, I believe. Under these circumstances, can the disease the patient suffered from have been acquired? or can it be traced to the injury she is said to have sustained after her fourth confinement? The seat of uneasiness or weak point, as she used to term it, was beneath the lower margin of the left ramus of the pubis, about an inch from the symphysis, there were no external indications of disease, but the tenderness was apparently seated within the pelvic cavity. The patient married early. She was a mother at 16 years of age, and a large family, as will be observed from the case, was the result. At best, such cases are very unsatisfactory, and all we can do is to palliate the most urgent symptoms, so as to make life as tolerable as possible under the circumstances.

No. 3.—*A Case of Hœmatemesis.* By D. C. McAllum, M.D., Assistant Surgeon, 5th Infantry Hyderabad Contingent, and in Medical charge Staff and Details at Bolarum.

(Communicated by the Principal Inspector General, Medical Department.)

Conductor A. W., Æt. 55, Ordnance Department; in India 33 years and 9 months; temperament, sanguine; habits, temperate; habit of body, stout.

August 19th, 1865.—Mr. W. was suddenly seized with profuse vomiting of blood this evening at 7 o'clock. On my arrival I found him very low; pulse quick and scarcely perceptible; skin covered with a cold clammy perspiration, and restless. He also complains of headache confined to the top of the head. On enquiry I was told he had complained of headache and want of appetite for some days past; but afterwards felt well and in good spirits. Directly after my arrival he threw up a very large quantity of blood, fully 3 quarts, in form of coagula and liquid.

Former history.—Mr. W. has suffered frequently from rheumatism, dyspepsia, and from occasional attacks of fever, and once from what I think must have been a slight attack of coup-de-soleil. I am told he has not been a hard drinker, and certainly since he came to Bolarum he has scarcely touched any spirits, &c.

In November last he had an attack somewhat similar to the present one, but it soon yielded to acid treatment. He came to Bolarum suffering from guinea worm. He has never complained of pain in the epigastric region or of nausea, or of sickness after or before meals. As far as I can gather from his statement, he has never had any symptoms of ulceration or cancer of the stomach.

Present state.—As above stated, the patient is very low, the matter vomited is pure blood with a little food mixed with it. The attack came on quite suddenly; he was sitting in the verandah smoking when he felt sick, and he at once brought up something black, as he states. Since my arrival he has vomited twice, and large quantities of blood were ejected. Before each act of emesis he feels a sensation of distension and pricking pain in the stomach, after which nausea and then sickness;—directly the stomach is relieved, he feels comfortable. On examination I find his liver of usual size, and no pain in it on pressure, kidneys are acting normally. No perceptible enlargement of the spleen, nor does he complain of pain on firm pressure being made over that organ. Bowels were moved.

Treatment.—On arrival I at once gave him small pieces of ice to swallow frequently, and applied ice externally over the abdomen, and gave him 30 drops of diluted sulphuric acid in water. The first dose of the acid mixture was given him with ice, at 10 P. M., immediately after having vomited a large coagulum of blood, and up to the present time, (11-30 P. M.) he has had no vomiting, but has been dozing, though restless. No pain or nausea. Pulse of better strength, and temperature rather above the standard of health, and dry. I have given him 20 drops of the Per-Chlorodyne, and left instructions for him to have cold broth with ice, and small quantities of brandy if there be no more vomiting.

20th.—At 5 A. M. he vomited a large quantity of black blood (effect of the acid), but up to that time he was dozing. This morning he states he is free from nausea and pain; has had a copious black stool; pulse small and quick; skin moist; no headache.

Continue acid, &c.

Vespere.—Same as above.
Continue Acid mixture, &c.

21st.—Threw up a small quantity of blood about 8 A. M.; feels uneasiness in the stomach and great thirst; skin warm.

℞ Muriate of Morphia gr. ¼.
In cold water every 4th hour.
Continue Acid mixture.

Vespere.—Pretty comfortable this evening, no sickness.
Continue Morphia and Acid.

22nd.—Feels stronger; no sickness or nausea; bowels moved, a copious black stool.
Continue medicine.

23rd.—Same as yesterday.

24th.—Feeling himself stronger, he got up and went into another room, and immediately after he commenced throwing up large quantities of blood. Ice checked it.
Acid mixture continued.

27th.—From last report has been free from sickness and feels stronger, though skin is still warm. Feels pain in the head over the longitudinal sinus. About 5 A. M. again vomited large quantities of red coagula and fluid blood.

℞ Emplast. Cantharid. 3×4 to nape of neck.
℞ Acetate of Lead—℥ ss.
Ext. Opii. gr. iii M. fiat Massa.
divide in 6 pills.
One every 3rd hour.
Purgative Enema
to be given directly.

28th.—At noon vomited large quantities of blood, arterial and venous.
Continue medicine.

2nd September.—Since last report he has been quiet; though not gaining strength. As he disliked the pills I have discontinued them, and he is now taking lime water and milk frequently, and having frequent enemata of broths, brandy, and laudanum, which have always been retained. After my visit he has again been throwing up large quantities of blood.

Ordered a blister over the region of the stomach.
Continue enemata, &c. &c.

4th.—Again vomited blood.

7th.—Again vomited blood frequently, more or less all day. Ordered lime juice and water to quench thirst.

10th.—No sickness, but is evidently gradually sinking. Has had no sickness since the 7th instant. Is slightly comatose, but is roused by speaking to. Urine free ; skin cool, moist; pulse thready. Has had brandy and broth enemata regularly.

7 P. M.—Getting weaker ; pulse thready ; difficult to rouse; refuses to take any thing, and at ¼ to 1 on the 11th morning he quietly expired without a struggle.

Post Mortem appearance.—Head not opened ; chest and abdomen opened ; contents of the thoracic cavity, healthy and pale.

Abdominal cavity.—Liver natural size, and perfectly healthy ; large and small intestines healthy.

Stomach.—Was in connection at its pyloric end with an enlarged spleen ; several apertures formed through the coats of the stomach into the body of the spleen ; spleen, slightly enlarged and friable.

The hæmorrhage from which the patient died was splenic, as is shown from the adhesion and apertures between the two organs.

All the abdominal organs very pale.

NOTE BY THE EDITOR.—The subject of the foregoing case was upon three or four occasions under my care before he went to Hyderabad. He was on sick leave when I first saw him, and was in such a debilitated state that I obtained an extension of leave for him. He had a decidedly scorbutic taint; his gums were very spongy and bled upon the slightest touch; he was pale, spanæmic and very weak, with wandering pains; but there were no ecchymoses upon the cutaneous surface, though the mucous surface of the hard palate was almost black from sub-epithelial hæmorrhage. He had considerable epigastric tenderness, and twice he vomited large quantities of blood. He was treated with liberal diet, tonics, chiefly ferruginous, and, on the first occurrence of hæmatemesis, with gallic acid, a few five grain doses of which quite controlled the hæmorrhage. Upon the second occurrence of hæmatemesis, he was seen, during my absence, by my Apothecary, Mr. Thompson, who administered a dose of gallic acid and advised his going into the General Hospital. I never saw him afterwards, but learnt on enquiry that he speedily recovered in Hospital, returned to his duty, and was subsequently transferred to Secunderabad.

No. 4.—*A Fatal Case of Acute Hepatitis following an Injury, and resulting in Abscess; large hæmorrhage from the Bowels; ulceration of the mucous coat of the Colon at its hepatic flexure.* By W. N. CHIPPERFIELD, Acting Physician, General Hospital.

J. E. S., aged 39 years, a Mechanical Engineer by trade, Englishman by birth, of a nervo-sanguine temperament, and of temperate habits.

5th September 1865.—Was admitted into the Surgical Ward yesterday, complaining of having suffered some injury to the spine. Dr. Paul requested me to see the patient with him this morning, and drew my attention to the fact that the hepatic dulness could be detected over a very much increased space, and I offered to take the patient under my care. He was, therefore, transferred to the Medical wards, and the following notes were taken.

Present state.—Complains of pain and sense of weight in the right hypochondrium, of *five days* duration. There is considerable fulness below the costal cartilages on the right side, extending to the right half of the epigastrium. Deep pressure is irksome to him, and even on gentle pressure much elasticity and indistinct fluctuation can be detected. Hepatic dulness commences at two and a half inches below the nipple and extends to the same distance below the cartilages in the right hypochondrium and to the linea alba about five inches below the ensiform cartilage. Has no pain in the right shoulder, has no cough, can lie on either side. Pulse 96, full, firm, and slightly jerking; skin warm and moist; tongue red at tip and edges, thickly coated in centre; bowels rather relaxed; stools semi-fluid, bilious feculence; urine normal in quantity, free from bile or albumen.

There is an angular prominence in the site of the spinous process of the eleventh dorsal vertebra, but no lateral movement can be detected. Pressure on either side of the prominence gives slight pain. Has slight weakness of the lower extremities, but there is no paralysis or anæsthesia. Can rise and walk along the ward; is in good spirits, and requests to be allowed an easy chair and to sit in the verandah.

History.—States that he has enjoyed very good health up to *five weeks* ago, when he fell from a height of about 5 yards alighting on his feet. Since that time he has had pain in the *back*, and has found himself rapidly losing health and strength. Has had pain in the abdomen, somewhat severe, for *five days* only, did not notice any uneasiness there previous to that time.

Ordered Broth diet.

Spongio-piline saturated with Solution of Opium over the tumour.

℞. Pulv. Ipecacuanhæ Co. gr. x.
At 7 P. M.

(The following daily reports are from notes taken by Mr. Assistant Apothecary E. Atkinson.)

6*th September.*—Slept badly. Pain in side much the same. Tongue as yesterday; bowels moved; pulse full and rather firm. Could eat some solid food.

To have chops for dinner.
No medicine during the day.
Opii. gr. ii. in pil. at bed-time.

7*th*, 8 A. M.—Slept pretty well. No improvement in other respects. Hepatic dulness and tenderness continues much the same. Pulse changed in character, 100, soft and rather weak; tongue cleaning; bowels moved freely, stools semi-fluid.

Continue Opiate Epithem.
℞. Quinæ Disulph. gr. ii.
Acidi. Sulph. Dil. ♏ x.
Tinct. Camphoræ Co. ʒ i.
Aquæ font. ℥ iss. M.—thrice daily.

Vespere.—Says he has felt much depressed to-day. Pain and fulness about the same. Skin of good temperature; pulse 108, full, soft; tongue moist, coated in centre, clean at tip and edges; bowels moved.

℞ Opii. gr. ii. in pil. at bed-time.
℞ Vini Xerici ℥ ii.
Sacchari ℥ ss.
Aquæ tepidæ ℥ iii.
At 8 P. M.

8*th.*—Slept pretty well. Continues much the same as yesterday. Pulse 108, full, a little jerking; bowels moved comfortably this morning.

℞ Quinæ Disulph. gr. ii.
Acidi Nitrici Diluti ♏ xv.
Aquæ font. ℥ iii, thrice to-day.

Vespere.—Much the same; bowels moved several times, stools liquid feculence; pulse 98, soft, weak.

Repeat Opii. gr. ii. at bed-time.
Repeat Negus.

9th.—Slept pretty well. Hepatic fulness and pain continues the same; had some pain in the lumbar regions last night, better now. Tongue white in centre, red at tip; pulse 96, soft; skin temperate.

Continue.

Vespere.—No change. Bowels moved several times, stools semi-fluid, yellow feculence mixed with a fair quantity of urine; tongue the same; pulse 96, soft, and feeble; skin warm and perspiring freely; has great thirst.

Repeat Opium and Negus.
℞. Acidi Sulphuric Diluti ʒi.
Aquæ font. Oi. M. to be used as a drink during the night.

10th.—Slept badly. Bowels moved frequently, stools principally composed of large dark masses of coagulated blood, no feculence, several small white masses of fat floating in stools; urine scanty; abdominal pain severe; tumour much larger, producing a very decided prominence in right epigastrium; very tender to the touch, fluctuation distinct, but no sign of adhesion having taken place, the parietes being quite movable; skin pallid, warm, moist; pulse 100, feeble; tongue pale, moist, foul.

℞. Acidi Gallici. grs. v. every third hour.
Sherry 2 oz. thrice a day.
Continue Opiate epithem.

Vespere.—Bowels moved but once, one large clot of blood. Is much the same.

Continue Pill, Negus and Acid drink.

11th.—Slept fairly; says he feels better; less pain in tumour, which continues of same size. Bowels moved once; tongue clean, moist; pulse soft and weak.

Omit Gallic Acid. Continue Sherry.

Vespere.—Much in same state. Stools three, yellow liquid feculence, no blood.

Continue Opium, Negus and Acid drink, which assuages his thirst.

From this time he remained much the same until the

20th.—Pulse small and feeble; tongue clean and moist; a small quantity of dark blood in the stools.

Repeat Gallic Acid if necessary.
Continue Sherry.

Vespere.—No improvement. Again passed a small quantity of dark blood; looks very pale and depressed; pulse very feeble; has had two doses of gallic acid.

℞ Chlorodyne ♏ xx.
Aquæ ℥i. at bed-time.

21st.—Slept badly. Hepatic tumour somewhat larger and more defined; tongue very foul at base, clean at tip; pulse small, feeble; skin temperate; bowels moved twice, no blood in the stool.

Continue Sherry.

Vespere.—Much the same; a little coagulated blood in stool this evening.

℞ Morphiæ Hydrochloratis gr. ½ at 8 P. M.
Continue Negus.

22nd.—Slept well; much the same; stools free from blood. Pulse very weak; tongue quite clean on anterior half.

Continue Wine.

Vespere.—Has had diarrhœa to-day; stools liquid, free from blood; much pain just below edge of tumour; very tender upon pressure.

Ext. Opii gr. ½ in pil.
every four hours.
Repeat Negus.

23rd.—Slept well. No pain in or about tumour now.

Continue.

25th.—Not so well; is looking very pale and haggard; tumour much the same; bowels frequently disturbed; stools fluid, yellow; pulse small and very feeble.

℞ Acidi Gallici gr. v.
Ext. Opii. gr. ½ M. f. Pil.
to be taken thrice to-day.
Sol. Morphiæ Acet. ʒss.
Mist. Camph. ℥i. M. f. Haust.
at bed-time.

26th.—Is rapidly emaciating, looking very haggard and distressed this morning. Skin cold and clammy; pulse very feeble; tongue foul at base, pale and dry in centre; bowels moved several times; stools semi-fluid.

Repeat Pil. every 2nd hour.
Sherry 2 oz. thrice or oftener if required.

27*th.*—Rapidly becoming worse. Very feeble now. Bowels moved frequently, no blood in stools.

℞ Zinci Sulph. grs. v.
Tinct. Opii. ♏ xx.
Aquæ Font. ℥ii.
ft. Enema
to be given every three hours.
Brandy 1 oz. every 3 hours. Soup frequently.

Vespere.—Much the same. Does not like the brandy. Bowels moved several times; skin cold and clammy; pulse thready; has had hectic flashes to-day. As there was evidence of adhesion having taken place, a small trocar was introduced at the most prominent part of the tumour, and a small quantity of pus escaped; wound covered with collodion.

Repeat Sherry thrice during the night.
℞ Sol. Morphiæ ʒi. at 8 P.M.

28*th.*—Slept pretty well, but is looking very haggard and distressed this morning. Skin clammy; pulse small and feeble; bowels moved but twice. A larger trocar was introduced, and about 12 oz. of thin pus escaped.

Poultice over tumour.
Continue Sherry and Soup.
Repeat Morphiæ gr. i. at 8 and 12 P.M.

29*th.*—No improvement. Slept badly. Complains of much pain in the tumour. Bowels moved several times; tongue dryish and brown; pulse very weak. The puncture in the liver was enlarged with a bistoury this morning, and 3 lbs. of creamy pus and several shreds of broken-down tissue escaped.

Continue support and sedatives.

30*th.*—A large quantity of pus came away with the poultice last night. Is very weak this morning. Pulse very small and feeble, 124; bowels moved several times, no blood in stools; tongue dry.

Sherry 1 oz. every hour.
Broth and Beef-tea frequently.
Egg Flip with milk thrice.

1st October.—Slept pretty well, but is not refreshed. A large quantity of pus escaped into the poultice. Is evidently sinking. Pulse 150, very feeble; skin cold and covered with cold perspiration.

Continue Wine and Flip.
℞. Acidi Nitrici Diluti ♏ xv.
Infusi Cinchonæ ℥iii.
M. f. haust. thrice.

2nd.—Is sinking rapidly.
Expired at 9 A. M.

Post Mortem at 4 P. M.—Body somewhat emaciated. An incision, an inch in length, exists about 2½ inches below inner extremity of cartilage of 8th rib.

Head—Not examined.

Thorax.—Two ounces of straw-coloured serum in the cavity of the pericardium. *Heart* natural size, but pale and slightly covered with fat on its right border. Cavities half filled with dark blood. *Lungs*, healthy.

Abdomen.—Great omentum drawn up over the superior border of transverse colon and adherent to abdominal parietes. *Liver* enlarged both upwards and downwards, and adherent together with the great omentum to the abdominal parietes over a surface about 3 inches square. The incision in the parietes leads through the centre of this adhesion to an irregular oval cavity existing in the anterior and inferior part of the convex surface of the organ close to the free edge, and to the extreme left of the right lobe. The cavity is surrounded by liver tissue in a sloughy, shreddy condition, and large hepatic veins traverse the whole of the cavity. A large clot of blood lies in its lower part. Liver substance blanched, but firm, no other abscesses exist. *Stomach*, healthy. *Small intestines* healthy. At the hepatic flexure of the *colon*, which is much compressed by the enlarged liver, there are signs of peritoneal inflammation, and upon laying the bowel open there are seen four ulcers about the size of a shilling and extending through both mucous and muscular coats; there are small clots upon these ulcers, and the contiguous surface of the bowel is much congested. *Kidneys* of natural size and consistence, cortical portion unusually pale.

Remarks.—The following remarks were made to the Clinical class at different periods during the progress of the case.

5th September.—Notwithstanding the careful examination which has just been made in this case, and taking into consideration all that we have been able to learn of its history and present aspect, I cannot pretend to be able to arrive at anything like a certain diagnosis. The patient says he was quite well five weeks ago, when he fell from a height, alighting on his feet. Now, the consequences of such a fall may be various; it is seldom any direct injury occurs to the lower extremities;—the brain may receive a great shock,—concussion in fact,—from *contre-coup;* or the base of the cranium may be fractured, or some portion of the vertebral column may be fractured, or displaced; or the spinal cord may receive a shock, or such injury as ultimately leads to inflammatory changes; or, if any of the abdominal organs are in a morbid condition, they may suffer;—thus I have known rupture of an enlarged and softened spleen with fatal hæmorrhage to occur from such an accident.

There are two points, however, about which we can be certain—

First.—The man is in a bad state of health, with considerable constitutional disturbance, coincident with, and symptomatic of, a local lesion.

Secondly.—There is a large soft tumour in the right hypochondrium and corresponding half of the epigastrium. And this tumour is evidently directly continuous with the liver; the hepatic dulness continues on to the tumour, no resonant tissue intervening. The hepatic dulness is also considerably extended upwards.

Now have we to deal here with simply an enlarged and suppurating liver (there is indistinct fluctuation you will remember) the result of an attack of hepatitis; or is the tumour a hæmorrhagic one? The latter is possible in this wise:—At the time of the fall a rupture of the hepatic substance may have taken place near to the posterior and inferior border of the organ, opening one or more of the hepatic veins (which you know are adherent by their walls to the liver parenchyma and always remain patent when a section of the liver is made;) a slow accumulation of effused blood may have taken place separating the capsule from the parenchyma and gradually gravitating towards the dependent free border, until the present tumour has been formed. You will notice that, whatever it is, the softening part is quite at the inferior part of the organ, for immediately we leave the lower border of the tumour, the resonance of bowel can be detected.

The patient says he had no abdominal pain or tenderness or fulness until five days ago, that he has had no fever, nor rigors, nor any icteric tint of the skin. He is very anæmic in appearance, and you will observe his conjunctivæ are free from any tinge of bile pigment. These facts would lead us to the second supposition, viz., that the tumour is the result of the gradual effusion and accumulation of blood. But then we must remember that hepatitis, acute, subacute, or chronic, may occur and run on to the formation of abscess without any very marked symptoms. The man has probably been so occupied with the supposed seat of injury,—the lower part of the dorsal segment of the spine,—that his attention has been diverted from the really suffering organ; for it is improbable that such extensive mischief should have happened to the liver in only five days.

I am, therefore, obliged to say that our diagnosis as to the exact *nature* of the tumour must be doubtful; but there can be no hesitation in saying that the prognosis is grave at the least,—we will put it down, unfavourable.

10th.—Our patient is not doing well. He is weaker, his pulse is rising, he gets clammy sweats frequently. His bowels are disturbed, and last night he passed, at least, a pound of coagulated dark blood. The tumour is larger and softer, fluctuation is very distinct, but no adhesion has taken place between the surface of the swelling and the abdominal walls. Hitherto we have no further aid to our diagnosis of the nature of the tumour, for even if it were hæmorrhagic, it would soften,—clot breaks down and forms a diffluent purulent mass.

Where does the blood come from? The tumour must press upon the transverse colon. Adhesion may have taken place, and ulceration into the bowel have occurred; and the hæmorrhage may be either from the ulcerating bowel, or, if the tumour is hæmorrhagic, part of its contents may have escaped into the bowel. However, there is no pus in the stool, so most likely the blood is from the ulcerated mucous membrane.

Whatever may have been the nature of the tumour upon its first appearance, I cannot now fail to recognize that it is an abscess, and I shall anxiously watch for signs of adhesion and then puncture. Looking at the condition of the patient, you can now see for yourselves that the prognosis is bad.

27th.—Last night I passed a trocar into the tumour, and some thin reddish pus escaped, this morning you have seen me let out a large quantity, with some small clots of blood, and some shreds of sloughy tissue. There were signs of adhesion before I punctured, but I should not have hesitated even had they not existed, for within the last few days, the tumour has much increased in size and become very soft, and the patient has had hectic. If the pus does not escape freely I shall enlarge the opening. The character of the discharge permits of my now saying that the tumour was not originally hæmorrhagic; had it been so, we should have had a less creamy pus and more broken clot. I fear our patient has not many days to live.

2nd October.—The post-mortem examination has cleared up this case. The liver is very much increased in size, pale, of nutmeg-appearance, and firm. The abscess is close to the inferior border and the longitudinal fissure, quite at the anterior surface of the organ. Its cavity would contain about 10 or 12 ounces of fluid, but you recollect that we evacuated 3 lbs. at one time, five days since; our inspection has shown us where the blood came from;—clearly from the ulcers at the hepatic flexure of the colon. There are no signs of healing about them, and had the patient not succumbed to the effects of the abscess, one or more of them might have gone on to perforation, setting up a fatal peritonitis.

With reference to the condition of the liver apart from the abscess, the post-mortem appearances are those which we recognize as indicating chronic inflammation. The nutmeg-like appearance denotes a hypertrophy by multiplication. The tissue is firm and does not break and crack easily as in cases of hypertrophy from increase in size of textural elements.

As to the comparatively small part of the liver occupied by the abscess:—I must tell you that acute hepatitis seldom affects the whole of the organ, it is generally limited to one part, or occurs in two or more isolated patches.

And as to the absence of symptoms before the occurrence of abdominal tumour:—If you refer to Frerichs' Treatise on Diseases of the Liver,—which you will find in the College Library,—you will observe that the absence of any functional derangement indicating the occurrence of hepatic inflammation is by no means unusual; and many cases have been recorded in which there was not only no functional derangement observed, but in which even no local symptoms were detected, and yet they proved to be cases of hepatic abscess of considerable size. In our case we had the local symptoms, but we were unable accurately to recognize to what they were due. This was chiefly in consequence of the history which the patient himself gave.

This leads me to anticipate a question which you will most likely put:—Was the abscess in this case in any way connected with the fall? I think so, most decidedly. Cases of traumatic hepatic abscess are not common, but Drs. Budd and Moorhead both mention having met with such cases. And I certainly think, that in this case, the actual inflammation which ended in abscess, was the result of injury to a previously damaged organ, which injury was caused by the fall he had five weeks previous to his admission and nine weeks previous to his death.

The case is an instructive one, and I hope we shall all benefit by the observation we have given to it.

No. 5.—*A Fatal Case of Typhoid Fever, with Maculæ, Diarrhœa, Grumous stools, &c.; complicated with Ulceration of the Cæcum, and Abscess of the Liver.* By W. N. CHIPPERFIELD, Acting Physician, General Hospital.

C. G., aged 55 years, a retired Military officer; residence in India 28 years. Habits, unknown; temperament, nervo-sanguine; habit of body, somewhat spare.

2nd December 1865.—Was sent for to visit this officer at 9 P.M. yesterday. The Apothecary on duty informed me that he arrived in a palanquin about an hour previously, accompanied by his butler and several servants, who said that he had been suffering from a low fever for about twelve days, whilst journeying from Pondicherry to Madras. It was also stated that he had diarrhœa, for which he was taking Port-wine. He was in a very dirty state when admitted, but had been cleaned and put to bed. I found him in a very low state, with a soft, weak pulse of 120. Tongue dry, small, contracted, pointed and covered with a thick brownish black fur; no sordes on teeth, gums, or lips; skin hot and dry, very palid. Did not reply to questions readily, but spoke cheerfully, and said he wished he could but reach Madras, where Binny and Co. would take care of him. Nates and loins covered with small ulcerations grouped into large patches, bed sores, in fact; probably produced by the jolting in a palanquin upon soiled linen. Hepatic dulness much increased upwards. Considerable fulness in the right lumbar and iliac regions, where there is great tenderness on slight pressure. On the thorax and upper part of abdomen, there are about twenty rose-coloured elevated spots with a few dark petechiæ and some minute nævi.

The butler states that his master has been in bad health for the last three years, and that he was lately much distressed at the death of a son. Is quite sure that the present illness commenced about two weeks since, and that he left Pondicherry because he did not like to be under French treatment.

Ordered small quantities of chicken broth at short intervals. Sherry one ounce every two hours. Simple dressing to nates, and arrack lotion to the loins.

This morning I find he has had no sleep; has no delirium, but speaks incoherently when first roused. Very lethargic, but when his attention is kept fixed answers somewhat cheerfully, saying he is better and quite comfortable. Has had four stools of a grumous appearance.

Continue.

5 P.M.—At 3 P.M. the skin became clammy, with a blue tinge about face and hands. The skin is now warm. Pulse very feeble. Replies to questions cheerfully, but not readily. Requires rousing. Bowels moved three times, liquid feculence of coffee-grounds appearance.

Continue all.

℞ Acidi Nitro-Hydrochlor. ♏ iii.
Tr. Aurantii ʒ ss.
Aquæ Font. ℥iss. every 4th hour.

3*rd.*—Very restless all night, but has slept a little this morning. When roused says he has had a very good night, and is much better. Constantly calls for wine, but retains it in the mouth for a short time and then spits it out. Pulse small, feeble, 128; tongue almost black, but not so dry; bowels moved thrice, stools same, has passed some urine. A few fresh spots have appeared upon the front of thorax.

Continue.

5 P.M.—No improvement. Very great abdominal tenderness evinced by shrinking when touched. Says he has no pain, and is much better. Diarrhœa going on. Spits out his medicine and broth, but takes his wine.

Continue.

4th.—Is much in the same state. Very restless last night. Bowels moved copiously five times, evacutions of a dark grumous character. Swallows with some difficulty, very disinclined to speak. No delirium. Pulse very feeble, 135; tongue dark-brown, but moist.

Continue Broth and Wine.
℞ Sp. Ammon. Aromat. ʒss.
Decocti Cinchonæ ℥iss. *M.*
ft. Haust. now and at 3 P. M.

Arrack lotion to loins, simple dressing to nates.

Vespere.—Patient gradually sinking. Expression of countenance haggard. Lower extremities dry and hot, but arms, hands, and fingers shrivelled, cold, and clammy. Answers questions after two or three repetitions, but with much hesitation. Pulse very feeble, fluttering; tongue brown and again dry; abdomen full, but not tympanitic, very tender over ascending colon.

Omit all but the Wine.

11½ P.M.—Patient became collapsed about half an hour ago, and has just expired.

Autopsy, *5th,* 8 A. M.—Body spare, muscles small, some sugillation on posterior and lateral parts of trunk.

Head.—Not examined.

Thorax.—Muscles of a deep red color. Upon raising the sternum, the pericardium is seen to have a considerable deposit of adipose tissue between its layers, the heart has also a thick covering of fat on its anterior aspect. Right ventricle contains a large, soft, colourless clot, extending an inch into pulmonary artery; walls of left ventricle very thick, cavity diminished (concentric hypertrophy); valves healthy.

Lungs.—Right pushed upwards by ascent of the convex surface of liver, but a thin border of lung overlaps the liver in front, down to 8th rib. Substance of lung quite healthy, slight hypostatic congestion.

Abdomen.—Thick layer of fat in parieties. Upon opening the peritoneum, the viscera are at once brought into view, the great omentum being drawn up under the diaphragm to the upper part of liver. It is well laden with fat, and its border is congested—of a rosy hue—there is no adhesion to the liver.

Stomach, healthy. Upon removing the small intestines and laying them open, Peyer's patches in the ileum are seen to be prominent and rough, and in a few places ulcerated. Along the line of attachment of the mesentery, the mucous coat is thickened and roughened by a deposit of grayish matter, punctated with black dots—this extends for 8 or 9 inches from the colic extremity of the ileum. At the inferior part of the cæcum, there is a patch of the size of a rupee, of a dark livid colour, and, upon handling it, a clot of blood is extruded, leaving a ragged ulcer, the size of a sixpence. Two inches higher a longer patch of dark colour exists. Upon laying the cæcum open, there are seen two ulcers, one smaller and round and perforated, corresponding to the point from whence the clot of blood was extruded, the other, about 3 inches long and half an inch broad, extending across the bowel, and covered with a clot and slough. Liver enlarged both upwards and downwards. No adhesions, several small soft prominences on both lobes. Upon attempting to remove the organ, a large abcess in the right lobe burst, giving exit to upwards of a pint of ill-formed pus; the organ throughout studded with small depôts of pus, thick and yellow.

There was no effusion into the peritoneal cavity. No adhesions nor other sign of peritonitis.

Remarks made to the Clinical Class.

2nd December.—There appears to me no doubt that this patient is suffering from true typhoid fever, I mean that specific disease which is attended by lesions of the solitary glands of the intestines, more especially of the aggregated patches named after Peyer. All his symptoms point to this. The rose-coloured circular spots disappearing on pressure, and returning when the pressure is removed, although not very numerous, are completely diagnostic. In all probality, we shall find more of them to-morrow. The stools, too, are somewhat characteristic; that dark, reddish brown colour they have, is due to admixture of blood. It is unfortunate that our patient is brought to us in such an advanced stage of his disease, and that we have so imperfect a history of him. His servant says he has been very much out of health for three years, but is positive that the present disease is not of more than two weeks' standing. You will notice, if you please, that our patient continues in a delirious state, that he is constantly muttering to himself, and if you suddenly take his wrist in your hand, you find a good deal of tremor of the muscles, though he cannot be said to have true subsultus tendinum.

The prognosis is very unfavorable. I do not observe a single symptom which may be looked upon as favorable. Look at his decubitus, not only supine, but with a tendency to slip down in bed, showing utter prostration of nervous and muscular power. Another unfavorable sign is the temperature of his skin, it is a little less this morning than it was last night, but it is still high. And another symptom there is which is of grave import, viz., the scattered petechiæ which we observed upon the thorax and abdomen. Don't mistake the small nævi under the right nipple for petechiæ, the flea-bite-like spots which I allude to do not disappear on pressure, they are minute local hæmorrhages, and betoken both altered blood and weakened capillaries.

Now, I do not say that this gentleman has not some disease, evidence of which we are not in a position to obtain. He is too ill to be accurately examined, but the space of hepatic dulness is much increased upwards, and there is so much tenderness and gurgling over his ascending colon, that I do not like handling him. However, we must come to the conclusion that we have now immediately to deal with a case of true typhoid fever, and that our patient is not simply in what is called a typhoid condition as the result of pre-existing inflammation. I fear we shall soon have an opportunity of verifying this diagnosis by post-mortem inspection.

5th.—The post-mortem examination shows what I expected to find, and somewhat more. The appearance of Peyer's patches is characteristic of typhoid fever. You see they are elevated, and many of them ulcerated. But, besides this, we have two large ulcers in the cæcum, one of which has passed completely through the coats of the bowel, but we have no extravasation, because a firm clot closed the opening. The large abscess in the liver is probably the result of chronic inflammation, but the smaller depôts of pus, not larger than a bean, are most likely the result of a kind of embolism, the conveyance of pus-cells or detritus of some kind into the mesentric veins, and their arrest in the small capillaries of the hepatic lobular plexuses. Had our patient not succumbed as he did by asthenia, in all probability he would very shortly have died from perforation of the cæcum, for we could not expect that the occluding clot would have remained *in situ* much longer; a very little motion of the bowels must have caused its extrusion.

It has been supposed, nay asserted, that typhus and typhoid fever never occur in India. This is a great mistake. Many cases have been recorded in the "Indian Annals of Medical Science," and also by Doctors Ranking and Cornish, in the "Madras Quarterly Medical Journal." All we can say is, that they are rare in our Presidency, compared to the frequency with which they occur in temperate climates.

[ETEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of January,* 1865.

to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed Extremes.		Daily Means.						
	Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
ches.	°	°	°	°	per cent.		Mls.	Ins.	
·042	78·9	66·1	73·5	65·8	67	N. N. E.	176	......	Fine.
·051	78·9	66·8	72·3	67·1	77	N. N. E.	138	......	Light flying clouds.
·051	79·4	66·9	74·2	67·8	73	N. N. E.	201	......	Chiefly fine.
086	79·2	67·3	74·4	66·0	65	N. N. E.	202	......	Flying clouds.
·068	76·2	67·8	73·2	68·9	81	N. by E.	182	0·20	Overcast. Rain from 5 to 7 A.M.
068	80·4	71·4	74·5	67·9	72	N.E. by E.	236	......	Cloudy.
·026	79·9	67·4	73·1	68·7	80	N. E. by E.	156	......	Flying clouds, clear night
023	79·4	66·5	73·9	69·6	81	N.E.	132	......	Fine.
·037	80·2	69·0	74·9	69·2	75	N. N. E.	214	......	Do.
·041	79·5	67·5	74·7	68·6	74	N.E. by N.	189	......	Light clouds.
·045	80·4	68·0	74·8	68·6	74	N.E. by N.	113	......	Fine, with passing clouds.
·047	80·4	67·9	74·4	69·1	77	N.E. by E.	105	......	Do.
·070	80·1	66·9	74·3	68·1	73	E. N. E.	133	......	Fine.
·086	79·8	67·8	74·6	67·3	69	N. E.	230	......	Fine, with passing clouds.
·091	79·8	66·8	74·4	66·7	67	N.E. by N	250	......	Pasing clouds.
·105	80·4	67·0	74·9	68·4	72	N. N. E.	208	......	Chiefly overcast.
·080	81·0	74·4	76·3	69·0	70	N.E. by N.	256	......	Cloudy.
·109	80·1	73·0	76·3	68·8	69	N. E.	233	......	Flying clouds.
·081	81·0	72·1	75·8	68·2	69	N.E. by E.	213	......	Fine, with passing clouds.
·080	79·9	67·3	74·6	66·2	65	N. E.	186	......	Chiefly fine.
·064	79·7	66·3	72·9	65·9	66	N.E. by N	176	......	Passing clouds.
.096	79·1	65·9	73·7	66·0	67	N.E by N	187	......	Fine, with passing clouds.
·104	79·8	65·9	72·1	66·8	77	N. E.	160	......	Chiefly fine. [clouds.
·086	79·5	66·4	73·9	68·5	76	N. E.	156	......	Chiefly fine with passing
·070	80·7	66·3	73·6	69·2	80	N. E.	118	......	Chiefly fine.
·024	80·2	66·4	72·7	68·2	80	N E. by E.	112	......	Fine.
·971	79·8	64·5	71·8	67·5	81	E.	84	......	Do.
·976	79·8	63·3	70·9	67·0	82	E. S. E.	72	......	Fine after sunrise.
·997	80·8	64·3	74·2	70·4	84	E. S. E.	117	......	Fine.
·990	81·0	67·8	75·4	70·0	77	E.S.E.	119	......	
·967	81·9	67 0	74·9	70·3	81	S.E. by E.	145	......	Light haze.

Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M.; Daily Means are obtained by the application of hourly corrections, deduced from years' observations. The Cistern of the Barometer is 27 feet above the level of the the *Receiver of the Rain-gauge* is three feet from the ground. The Wind and *istered are for the current civil day*—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of February,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed Extremes.		Daily Means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	30·016	82·4	68·8	76·4	71·2	78	S.E.byE.	134	.....	Hazy clouds.
2nd	30·028	81·9	70·7	76·5	71·3	78	E.	155	....	Cloudy.
3rd	30·037	82·7	72·1	77·5	72·2	78	E. N. E.	184	....	Chiefly cloudy.
4th	30·019	81·7	68·9	75·2	70·7	81	N.E·byE	104	....	Passing clouds.
5th	29·996	81·9	68·6	75·2	70·3	79	E. by N.	94	.....	Fine, with passing clouds.
6th	30·000	82.4	68·8	76·4	71·2	78	E.	101	....	Do.
7th	30·001	82·2	69·2	76·6	70·7	75	E. by N.	110	....	Passing clouds.
8th	29·936	82·6	68·6	75·5	70·1	77	E. by S.	106	......	Nearly fine.
9th	29·909	82·4	68·8	76·3	70·5	76	S. E.	149	.....	Fine.
10th	29·885	83·9	70·8	77·0	71·2	76	S. S. E.	185	....	Cloudy morning, fine day.
11th	29·868	83·9	68·7	78·0	73·0	79	S.	180	......	Fine.
12th	29·908	85·6	73·6	79·2	74·7	81	S. E.	170	......	Fine day, cloudy night.
13th	29·975	84·2	73·2	78·5	73·3	78	E. S. E.	170	....	Clou dy.
14th	30·009	83·8	74·2	78·5	72·1	74	E.	159	....	Morning cloudy, day fine.
15th	30·044	85·6	74·5	79·1	72·6	73	E.	203	....	Fine.
16th	30·071	83·5	75.2	78·6	71·0	70	E.	193	....	Do.
17th	30·024	83·8	74·1	78·3	70·4	68	E.	139	....	Chiefly fine.
18th	29·941	84·3	70·0	77·4	71·2	74	E. S. E.	102	....	Fine.
19th	29·994	85·5	69·8	78·3	71·8	73	E. S. E.	125	.....	Do.
20th	29·999	85·0	69·8	76·9	71·2	76	E. S. E.	80	....	Do.
21st	29·981	84·8	68·6	75·2	69·5	73	S. E.	91	....	Do.
22nd	29·967	84·4	67·6	76·0	71·0	79	S. E.	94	....	Do.
23rd	29·986	83·4	67·8	76·0	71·4	81	S. E.	118	....	Do.
24th	29·976	84·3	67·6	77·4	71·8	77	S.E.byE.	114	....	Passing clouds.
25th	29·948	86·4	72·0	79·7	74·0	77	S.E.byS.	175	....	Fine, with passing clouds.
26th	29·948	86·4	73·6	80·1	74·4	77	S. E.	173	......	Chiefly fine.
27th	29·990	86·2	73·7	80.0	73·6	74	S. E.	183	... ...	Fine.
28th	30·034	84·9	72·2	78·8	72·5	74	E. by S.	109	. .....	Fine.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M.; and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the *Sea, and the Receiver* of the Rain-gauge is three feet from the ground. The Wind and *Rain registered are for the* current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of March,* 1865.

Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed Extremes.		Daily Means.			Prevailing direction.	Daily velocity.		
	Maxim.	Minim.	Dry.	Wet.					
nches.	°	°	°	°	per cent.		Mls.	Ins.	
30·017	85·1	73·8	79·0	72·1	72	E.	138	......	Passing clouds.
29·975	84·8	73·1	79·5	72·1	70	E. S. E.	126	......	Fine, with passing clouds.
29·936	84·9	70·6	78·3	71·5	73	E. S. E.	132	......	Chiefly fine.
29·916	85·5	68·8	78·7	73·2	77	S.E.by S.	169	......	Fine.
29·919	85·8	68·6	79·4	73·8	77	S.E.by S.	201	......	Do.
29·913	85·9	71·6	79·2	71·8	70	S.E.by S.	184	......	Do.
29·901	86·3	70·1	79·9	73·0	72	S. E.	217	......	Do.
29·885	88·0	74·7	81·1	75·5	78	S.E.by S.	237	......	Flying clouds.
29·904	87·3	78·6	81·2	75·2	76	E. S. E.	243	......	Heavy passing clouds.
29·967	86·2	74·1	80·5	73·7	73	E. S. E.	150	......	Passing clouds.
29·982	87·4	72·7	80·4	73·2	71	E. S. E.	108	......	Nearly fine.
29·975	86·6	73·6	80·1	74·1	76	E. S. E.	117	......	Fine.
29·933	87·0	73·4	80·1	73·8	75	E. S. E.	122	......	Fine with, passing clouds.
29·958	86·5	75·7	81·0	73·5	70	E. by S.	154	......	Do. do
29·988	87·3	72·8	80·1	73·3	73	E. N. E.	175	......	Passing clouds.
30·029	86·4	72·0	79·4	73·5	76	E. N. E.	104	......	Cloudy and hazy.
30·026	86·2	72·6	79·5	72·8	73	E. N. E.	140	......	Hazy clouds.
29·990	85·6	71·9	79·2	72·4	73	E. N. E.	122	......	Do.
29·974	85·3	72·2	79·3	72·3	72	N. E. by E	156	......	Passing clouds.
30·002	86·0	72·2	79·7	74·5	79	E. N. E.	118	......	Cloudy.
29·990	87·4	76·1	80·9	74·3	74	E.	123	......	Cloudy morning, fine day.
29·960	86·5	71·6	79·9	73·7	75	E.	104	......	Fine.
29·940	86·3	71·8	79·0	73·7	78	E. S. E.	110	......	Nearly fine.
29·915	88·3	71·6	79·8	74·2	77	S.E.by S.	87	......	Fine.
29·936	88·8	71·9	80·3	74·0	77	E. by. S.	110	......	Do.
29·942	89·8	71.7	80·7	74·0	73	S.E. by S.	159	......	Thin clouds.
29·948	87·6	71·8	81·2	74·7	74	S.E. by E.	122	......	Passing clouds : fine night.
29·962	88·8	74·7	82·0	76·1	76	S. E.	189	......	Chiefly fine.
29·939	90·0	75·7	83·4	75·7	71	S. E. by S.	205	......	Do.
29·981	90·3	73·6	82·4	74·9	71	S. E.	154	......	Fine.
29·973	89·6	74·3	83·3	76·6	75	S. E.	178	......	Hazy.

he Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M.; e Daily Means are obtained by the application of hourly corrections, deduced from years' observations. *The Cistern of the Barometer* is 27 feet above the level of the d *the Receiver of the Rain-gauge is* three feet from the ground. The Wind and gistered are for the current civilday—from midnight to midnight.

N. R. POGSON, *Government Astronomer.*

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of April,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed Extremes.		Daily Means.			Prevailing direction.	Daily velocity.		
		Maxim.	Minim.	Dry.	Wet.					
	Inches	°	°	°	°	Per cent.		Mls.	Ins.	
1st	29·967	90·7	78·6	84·5	78·1	76	S. E	146	......	Hazy clouds.
2nd	29·957	91·2	76·7	84·6	77·8	75	S.E.byS.	173	....	Do.
3rd	29·959	91·3	77·9	84·3	77·7	75	S.E.byS.	191	....	Cloudy.
4th	29·950	91·2	77·0	84·4	78·0	76	S. S. E.	199	....	Fine, with passing clouds.
5th	29·918	94·5	76·6	84·7	77·4	73	S. by E.	239	....	Chiefly fine.
6th	29·906	92·5	77·7	84·2	77·0	73	S. S. E.	228	....	Do.
7th	29·896	90·9	77·0	84·0	78·2	78	S. S. E.	202	....	Fine.
8th	29·888	92·2	77·5	84·5	78·3	76	S. S. E.	204	....	Do.
9th	29·873	93·4	77·6	84·9	78·3	75	S. by E.	207	......	Chiefly fine.
10th	29·863	93·4	77·9	85·1	78·0	74	S. S. E.	204	......	Fine.
11th	29·866	92·3	76·9	84·2	76·7	71	S. S. E.	195	....	Do.
12th	29·912	90·6	74·2	83·6	75·9	71	S.E.byS.	122	....	Do.
13th	29·943	91·2	76·9	84·4	77·6	74	S.E.byE.	110	....	Passing clouds.
14th	29·911	91·3	77·7	84·7	78·3	76	E. S. E.	150	....	Hazy and cloudy.
15th	29·890	92·0	78·8	85·5	78·2	73	S.E.	136	....	Fine day.
16th	29·795	93·2	78·0	84·9	77·7	73	S. S. E.	186	....	Cloudy.
17th	29·768	93·3	80·2	86·1	78·7	73	S. S. E.	240	....	Chiefly overcast.
18th	29·848	92·9	78·9	86·5	77·1	66	S. S. E.	204	....	Passing clouds.
19th	29·879	89·5	79·7	84·9	78·2	75	E. S. E.	117	......	Chiefly overcast.
20th	29·806	92·0	78·4	84·3	78·1	76	S.E.	147	0·02	Passing clouds.
21st	29·808	93·3	78·8	85·7	78·9	75	S.E.	174	.....	Do.
22nd	29·828	92·2	80·8	84·4	79·4	77	S.E.	206	....	Fine, with passing clouds.
23rd	29·803	93·4	80·5	85·0	70·0	77	S.E.byS.	228	....	Light clouds.
24th	29·775	95·5	80·8	87·1	80·0	74	S. S. E.	209	....	Passing clouds.
25th	29·757	94·3	81·3	88·1	80·2	71	S. by. E	238	....	Thick haze.
26th	29·781	94·5	80·2	86·7	78·2	68	S. S. E.	184	....	Passing clouds.
27th	29·801	92·9	81·4	86·9	73·3	72	S.E.	221	......	Do
28th	29·770	94·6	78·9	86·4	77·9	68	S.E.	141	.....	Light hazy clouds.
29th	29·686	94·6	80·5	87·4	80·7	75	S.E.	173	.....	Fine.
30th	29·639	96·2	82·7	89·7	80·8	68	S. by E.	252	......	Do.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M.; and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the Sea, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of May,* 1865.

Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed extremes.		Daily means.						
	Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
uches.	°	°	°	°	per cent.		Mls.	Ins.	
29·702	94·7	82 9	88·6	81·0	72	S. S. E.	278	....	Fine.
29·763	96·0	82·0	88·2	80·1	71	S. E. by S.	232	.... ..	Fine, with passing clouds.
29·771	95·4	82·6	89·0	80·4	69	S. by E.	318	....	Fine day, cloudy night.
29·781	101·6	82·9	88·2	77·5	62	S. S. W.	341	......	Cloudy, with high wind at night
29·764	103·5	82·7	89·2	78·7	63	S. S. W.	307	....	Frequently clouded.
29·788	103·0	84·9	88·2	78·2	64	S. S. W.	266	0·07	Cloudy, with fine intervals.
29·804	100·8	81·0	86·7	77·9	68	S.W.byS.	226	0·02	Chiefly clouded.
29·738	102·9	80·6	88·1	78·2	64	S.W.byS.	297	.... ..	Fine, with passing clouds.
29·750	102·8	82·7	88·9	77·7	61	S. S. W.	244	....	Fine.
29·763	101·1	83·4	89·6	77·7	59	S. S. W.	261	....	Do.
29·748	100·8	81·2	89·7	77·0	57	S. by E.	236	......	Do.
29·775	98·4	82·6	91·3	77·7	55	S.	205	....	Passing clouds.
29 786	95·5	80·9	88·1	77·7	63	S. W.	284	....	Chiefly cloudy.
29·767	95·0	81·6	88·1	78·2	64	S.	213	....	Chiefly fine.
29·717	95·2	81·4	87·5	80·5	74	S. S. E.	237	....	Fine.
29·753	94·4	81·9	88·0	77·4	62	S.W.byS.	230	....	Light clouds.
29·791	96·6	80·8	88·5	79·5	68	S. by W.	183	.... ..	Do.
29·803	95·4	82·9	88·9	79·1	66	S. S. E.	250	....	Frequent clouds.
29·804	95·3	82·5	87·4	79·4	71	S. S. E.	223	......	Chiefly cloudy.
29·791	93·6	82·8	85·2	77·9	73	S. by E.	196	0·02	Nearly overcast.
29·762	93·6	80·2	86·8	79·2	72	S. E.	131	....	Passing clouds, fine night.
29·779	95·9	81·4	87·7	79·8	71	S. S. E.	189	....	Passing clouds.
29·795	90·8	82·7	85·4	79·8	79	S. by E.	219	0·13	Passing clouds.
29·751	95·4	80·2	84·4	77·5	73	S. by W.	221	0·12	Fine morning cloudy day: a light storm passed over towards the south about 1 P.M.
29·686	99·2	78·8	87 3	79·5	72	S. S. W.	260	....	Chiefly clouded.
29·659	99·1	81·5	90·0	78·7	61	S. by. W.	213	....	Passing clouds.
29·669	103·4	82·4	86·1	78·2	70	S. W. by S.	263	0·02	Passing clouds. Light shower about 3 P.M.
29·676	103·6	79·7	88·6	81·3	73	S. W. by S.	318	....	Light clouds.
29·650	100·5	82·8	90·3	78·7	60	S. S. W.	274	....	Hazy.
29·619	97·3	82·9	87·8	79·4	70	S.	359	....	Thick haze.
29·606	96·1	82·2	86·4	79·1	73	S. by W.	303	.....	Hazy clouds.

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N. R. POGSON, Government Astronom

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of June,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers. Observed extremes. Maxim.	Standard Thermometers. Observed extremes. Minim.	Standard Thermometers. Daily means. Dry.	Standard Thermometers. Daily means. Wet.	Percentage of humidity.	Wind. Prevailing direction.	Wind. Daily velocity.	Depth of rain.	GENERAL REMARKS.
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·592	94·0	80·7	87·4	79·0	70	S. by E.	218	......	Passing clouds.
2nd	29·647	94·7	82·1	86·8	79·0	72	S. S. E.	208	0·05	Fine before sunrise: passing clouds after.
3rd	29·666	94·3	82·0	87·8	80·6	73	S. S. E.	204	......	Chiefly overcast.
4th	29·711	97·7	82·1	88·1	79·6	69	S. S. E.	253	......	Fine, with passing clouds.
5th	29·693	102·5	82·2	89·1	78·8	64	S.	213	......	Do. do.
6th	29·709	102·7	81·8	88·6	78·9	66	S. S. W.	166	......	Chiefly fine.
7th	29·746	99·7	82·6	87·7	78·6	68	S.W.by S	188	......	Cloudy.
8th	29·755	99·5	81·1	87·5	76·4	61	S.W.by S	207	......	Do.
9th	29·692	100·9	81·7	90·5	76·3	53	W.by S.	268	......	Chiefly overcast.
10th	29·692	102·0	84·2	91·2	77·8	55	W.	255	0·06	Nearly do.
11th	29·764	102·3	83·8	88·9	78·8	65	SW by W	220	......	Cloudy.
12th	29·785	101·3	82·0	89·9	79·0	62	SW by W	270	......	Heavy clouds.
13th	29·727	101·8	83·8	88·4	78·0	63	SW by W	256	0·04	Chiefly clouded.
14th	29·703	100·8	83·0	88·2	77·6	62	S.W.	239	0·04	Cloudy.
15th	29·719	99·6	83·4	87·2	76·7	62	S.W.	261	0·14	Chiefly overcast.
16th	29·734	97·0	80·5	89·1	78·5	63	S.W.	252	......	Passing clouds.
17th	29·708	100·2	83·5	89·0	78·3	63	S.W.	251	......	Cloudy.
18th	29·699	101·8	83·5	90·6	77·3	55	S.W.byS.	288	......	Do.
19th	29·728	101·2	82·7	88·9	78·1	62	S. S. W.	277	......	Passing clouds.
20th	29·767	101·5	82·7	89·0	78·2	62	S.	246	......	Fine, with passing clouds.
21st	29·764	98·9	82·5	90·0	78·9	62	S. S. E.	195	0·28	Do. Rain at 11¾ P. M.
22nd	29·762	101·9	82·6	88·5	78·3	64	S.S.W.	223	......	Frequently clouded.
23rd	29·746	100·2	80·8	89·7	77·9	60	S.	251	......	Light clouds.
24th	29·729	99·7	84·7	89·7	75·8	53	S. W.	285	......	Cloudy.
25th	29·721	103·1	82·7	85·7	77·6	70	S.W.byS	239	0·52	Cloudy. Rain at 4, 7, and 11 P. M.
26th	29·746	98·9	80·3	85·3	77·2	70	S. W.	223	0·17	Chiefly overcast. Rain about 6 P. M.
27th	29·697	99·3	81·6	88·9	75·4	54	W.S.W.	274	0·02	Do. Shower at 6¼ P. M.
28th	29·679	92·5	83·4	86·5	75·1	60	SW by W	186	0·03	Overcast. Shower at 6¾ P. M.
29th	29·625	98·8	80·8	88·2	74·5	54	W. by S.	288	......	Do.
30th	29·648	96·5	83·4	88·4	74·8	54	W. by S.	324	0·05	Chiefly overcast. Shower at 5 P. M.

The Standard Barometer and Thermometers are read at 10 A. M., 4 P. M., and 10 P. M., and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the Sea, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of July,* 1865.

Barometer reduced to 32°.	Standard Thermometers. Observed extremes. Maxim.	Standard Thermometers. Observed extremes. Minim.	Standard Thermometers. Daily means. Dry.	Standard Thermometers. Daily means. Wet.	Percentage of humidity.	Wind. Prevailing direction.	Wind. Daily velocity.	Depth of rain.	GENERAL REMARKS.
Inches.	°	°	°	°	per cent.		Mls.	Ins.	
29·658	99·7	80·1	91·0	74·9	48	W.S.W.	332	....	Cloudy. [5¾ P. M.
29·654	101·2	83·9	90·2	75·9	52	S. W.	287	0·03	Passing clouds. Shower at
29·706	96·5	82·0	89·1	75·3	53	SW by W	229	....	Cloudy.
29·704	97·6	82·6	88·3	74·5	53	SW by W	304	....	Overcast.
29·715	98·3	80·8	88·2	73·8	51	SW by W	309	....	Do.
29·749	97·0	81·1	88·9	75·6	54	SW by S.	259	....	Chiefly overcast.
29·767	100·1	82·5	89·7	75·3	52	SW by W	349	....	Do.
29 765	98·8	76·2	84·1	76·0	70	S.W.	203	0·87	Overcast. Rain at intervals between 5 and 9½ P. M.
29·768	92·5	76·8	83·7	76·7	73	S.W.	199	....	Overcast.
29·788	92·7	78·8	83·8	75·5	69	S. S. W	187	0·03	Do. Shower at 7¼ P.M.
29·766	97·8	78·3	83·4	76·3	73	S. by W.	206	0·45	Cloudy. Rain between 6¾ and 7¼ P. M.
29·728	95·4	78·9	86·5	77·3	66	S. S. W.	251	....	Chiefly clouded.
29·734	95·2	79·8	85·0	77·2	71	SW by S	239	....	Do.
29·743	98·3	78·7	86·1	78·6	72	S. S. W.	238	....	Passing clouds.
29·744	100·0	79·2	87·0	78·2	68	SW by S	222	0·04	Cloudy. Showers about 4½
29·740	99·5	80·6	89·9	79·4	63	SW by W	229	....	Do. [and 10½ P.M.
29·745	100·8	81·7	88·5	75·8	57	W. S. W.	272	0·16	Passing clouds. Rain at 8½ P. M.
29·737	100·2	80·8	88·0	75·6	57	SW by W	233	0·02	Do. Showers at 6½ and 10½ P. M.
29·697	99·0	81·6	85·5	76·5	67	SW by S	244	0·01	Do. Light shower at 3¼ P. M.
29·722	98·5	82·1	86·6	77·4	66	S.S. W.	228	0·17	Heavy passing clouds. Rain from 4½ to 5¾ P. M.
29·725	93·2	77·9	85·0	78·6	76	S. by W.	202	0·14	Cloudy. Rain from 1 to 2 A. M.
29·713	95·9	77·7	85·8	78·3	72	S.W. by S.	187	....	Passing clouds.
29·760	93·0	78·3	85·8	78·7	74	S. S. W.	126	0·01	Do. Light shower at 3½ A. M.
29·789	96·5	79·6	83·8	78·5	79	S. by E.	172	0·15	Fine, with passing clouds. Rain at 3¼ P. M.
29·823	95·4	77·8	85·4	77·4	70	NW by N	225	....	Cloudy.
29·794	94·0	77·9	86·0	78·0	70	S. by E.	156	....	Fine, with passing clouds.
29·791	92·1	80·8	86·2	77·8	69	S.E. by S.	142	....	Chiefly fine.
29·818	94·0	80·2	86·2	77·9	69	S. by E.	165	....	Light passing clouds.
29·819	92·0	79·7	85·8	79·1	75	S. E.	162	....	Fine, with passing clouds.
29·781	91·7	79·3	85·7	78·3	73	S. E.	189	....	Chiefly fine.
29·759	92·4	81·5	86·7	78·0	68	S. S. E.	229	....	Do.

he Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., e Daily Means are obtained by the application of hourly corrections, deduced from y years' observations. The Cistern of the Barometer is 27 feet above the level of the nd the *Receiver of the Rain-gauge is three* feet from the ground. The Wind and *gistered are for the current civil day*—*from* midnight to midnight.

N. R. POGSON, Government Astron

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of August,* 1865.

365.	Barometer reduced to 32	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·715	94·6	79·8	84·9	78·5	76	S. by W.	187	.....	Passing clouds.
2nd	29·750	87·7	79·0	82·3	76·6	78	S.	70	.....	Chiefly overcast: stormy looking about 3½ P.M.
3rd	29·764	96·8	77·7	86·9	78·3	69	S. by E.	102	....	Fine, with passing clouds.
4th	29·788	93·1	78·5	84·4	77·0	72	S.	88	......	Chiefly cloudy.
5th	29·779	93·4	76·8	85·2	77·0	69	S W by W	142	0·16	Nearly overcast. Showers at 3¼ and 5¾ A.M.
6th	29·756	82·4	75·1	77·3	75·0	90	W. S.W.	107	1·25	Overcast. Rain between 4½ and 10 A.M., and from 2 to 4 P.M.
7th	29·731	88·5	76·9	80·8	77·3	86	S.W. by S.	92	0·12	Cloudy. Rain at 2½ A.M.
8th	29·743	89·2	76·5	81·7	77·4	83	S.W. by S	110	0·07	Overcast. Light rain from 8½ to 9½ A.M.
9th	29·716	93·3	76·8	79·1	76·3	89	S W by W.	118	0·79	Cloudy. Rain from 3½ to 6¾ P.M.
10th	29·683	91·8	76·6	82·1	77·5	82	S. S. W.	129	0·34	Do. Rain from 8½ to 9¾ P.M.
11th	29·701	91·3	77·1	82·5	78·3	83	SW by W.	177	0·13	Do. Shower at 11¼ P.M.
12th	29·747	91·2	76·7	81·3	76·8	82	S. S. W.	165	0·52	Overcast. Drizzle from 2½ to 5 A.M. Rain from 6½ to 12 P.M.
13th	29·786	89·1	76·2	81·5	75·9	78	SW by W.	214	0·03	Overcast. Light rain between midnight and 3 A.M.
14th	29·761	81·1	76·2	77·9	73·9	83	W. S. W.	206	0·17	Overcast. Slow rain from midnight to 5 A.M. and at 10 P.M.
15th	29·738	87·2	76·0	82·2	75·3	73	S.W. by S.	213	0·07	Overcast. Slow rain before 4 A.M
16th	29·799	89·3	74·9	81·4	76·3	80	SW by W	162	0·60	Overcast. Rain at 5½ A.M., 5¾ to 7¼, 8¼ and 10½ P.M. Heaviest about 6 P.M.
17th	29·838	92·2	76·3	81·9	76·8	80	S. S. W.	168	0·47	Cloudy. Heavy rain at 9¼ P.M. Light ditto at 11¾ P.M.
18th	29·828	83·3	76·8	81·0	75·2	77	S.W. by S.	171	0·24	Overcast. Rain from midnight to 4 A.M., and at 11 A.M.
19th	29·755	91·8	77·6	84·1	76·0	70	S. W.	191	0·10	Chiefly overcast. Shower at 5½ P.M.
20th	29·740	91·0	79·6	83·9	75·2	67	W. S. W.	216	....	Overcast.
21st	29·743	91·9	79·0	85·1	74·3	61	SW by W.	269	......	Cloudy.
22nd	29·717	91·6	78·3	85·8	73·8	58	W. S. W.	238	....	Do.
23rd	29·714	93·5	79·6	86·4	76·4	64	S. W.	219	....	Passing clouds.
24th	29·733	95·3	81·6	87·0	76·6	63	S. W.	259	......	Cloudy, with fine intervals.
25th	29·748	96·4	80·6	85·9	77·6	69	S.W. by S.	238	....	Fine, with passing clouds.
26th	29·736	96·6	80·0	84·7	76·9	71	S. W.	250	0·08	Do. Shower at 7 P.M.
27th	29·752	94·2	79·0	86·3	76·0	63	W. S. W.	222	... ...	Passing clouds.
28th	29·757	95·6	81 8	87·4	75·1	57	W. S. W.	203	....	Do.
29th	29·799	97·8	80·9	87·7	76·9	62	SW. by W	239	0·10	Do Showers at 5 and 7 P.M.
30th	29·797	94·4	77·4	88·4	75·2	69	SW by W.	202	1·80	Cloudy. Rain from 9¼ P.M. to midnight. A heavy thunderstorm 10 to 11 P.M.
31st	29·756	93·5	75·7	85·1	77·1	70	S.W. by S.	141	0·15	Rain till 1½ A.M. Chiefly overcast.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., *and the Daily Means are obtained* by the application of hourly corrections, deduced from *twenty years' observations.* The Cistern of the Barometer is 27 feet above the level of the *Sea, and the Receiver of the* Rain-gauge is three feet from the ground. The Wind and *Rain registered* are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of September,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·812	94·3	79·1	84·9	78·3	75	S. S. W.	180	....	Passing clouds.
2nd	29·831	91·4	78·7	84·9	78·5	76	S.	155	....	Do.
3rd	29·800	94·8	80·8	84·6	77·2	72	S. W. by S	204	....	Do.
4th	29·794	89·1	75·9	82·7	76·7	77	W. S. W.	190	0·23	Chiefly overcast. Rain at 2¾ and 3¾ A. M.
5th	29·776	90·5	77·1	83·4	77·6	78	S. S. W.	140	0·04	Chiefly overcast. Shower at 1¾ A. M.
6th	29·781	92·6	76·9	84·1	76·3	71	S.E. by S	143	....	Fine, with passing clouds.
7th	29·804	92·3	78·4	84·9	77·2	71	S. S. E.	149	....	Light clouds.
8th	29·772	92·2	78·5	85·1	75·3	65	S. W. by S	194	....	Do.
9th	29·732	92·3	77·9	84·1	74·8	65	S. W.	221	....	Chiefly overcast.
10th	29·739	92·5	78·5	86·2	74·7	59	S. W. by S	242	....	Cloudy.
11th	29·758	93·7	79·7	86·4	75·7	62	W.	239	....	Chiefly cloudy.
12th	29·750	95·6	79·5	87·2	74·6	56	SW by W	233	....	Fine, with passing clouds.
13th	29·768	94·3	79·4	87·1	74·8	57	S. W. by S	209	....	Light hazy clouds.
14th	29·763	95·2	78·8	84·6	77·1	71	S.S.E.	215	....	Passing clouds.
15th	29·774	93·5	79·7	85·6	76·7	67	S.S.E.	176	....	Chiefly cloudy.
16th	29·761	94·6	78·4	83·2	78·4	81	S. by E.	149	0·02	Chiefly overcast.
17th	29·758	88·0	79·4	82·9	72·9	63	W.S.W.	147	....	Overcast.
18th	29·760	93·4	79·6	84·5	74·2	62	W. N. W.	205	....	Chiefly overcast.
19th	29·772	94·8	77·2	84·9	74·7	62	N. W.	196	0·06	Do. shower at 9½ P. M.
20th	29·766	88·5	79·2	83·4	74·5	66	W.	204	0·02	Overcast.
21st	29·765	94·4	80·2	86·9	74·3	56	W.N.W.	153	....	Chiefly overcast.
22nd	29·773	94·0	79·9	85·0	75·5	65	N.N.E.	125	....	Passing clouds, clear night.
23rd	29·807	95·3	77·6	85·3	77·7	71	S.E. by S.	134	....	Fine, with passing clouds.
24th	29·830	94·5	77·8	83·0	78·0	80	S. S. E.	109	0·91	Passing clouds, rain from 1 to 2 P. M.
25th	29·849	91·0	78·8	84·9	78·9	77	S. S. E.	147	....	Chiefly fine.
26th	29·881	91·6	78·2	84·8	77·7	73	S. S. E.	166	....	Do.
27th	29·873	93·0	77·7	85·4	77·6	71	S. E.	109	....	Passing clouds.
28th	29·843	94·4	78·9	85·7	75·7	64	E. S. E.	114	....	Fine, with passing clouds.
29th	29·830	94·9	76·8	85·4	76·5	67	S.	142	.....	Do. do.
30th	29·838	94·8	75·5	85·4	76·9	68	S.	120	.....	Passing clouds.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the Sea, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of October,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·863	94·5	76·2	84·7	76·4	69	S. by E.	137	....	Passing clouds.
2nd	29·866	96·3	77·4	80·9	76·0	80	S.	145	0 21	Do. Rain about 4 P. M.
3rd	29·891	94·1	75·8	84·5	77·0	71	S. S. E.	126	....	Fine, with passing clouds.
4th	29·889	96·2	73·0	79·4	74·2	78	N.E. by E.	137	0·43	Ditto. Rain about 3¾ P. M.
5th	29·864	92·4	75·8	83·5	76·8	74	S.E. by S.	123	....	Passing clouds.
6th	29·835	93·0	78·4	84·4	76·0	69	S. E.	132	....	Light clouds.
7th	29·863	95·3	77·6	83·0	79·0	84	S. E.	128	....	Fine, with passing clouds.
8th	29·907	93·3	78·2	86·2	78·6	72	S. S. E.	165	....	Do.
9th	29·902	93·3	77·4	84·8	78·4	76	S. S. E.	129	....	Light clouds.
10th	29·905	91·0	78·6	85·2	77·3	70	S.E. by E.	99	....	Chiefly fine.
11th	29·908	89·1	76·4	83·6	76·6	73	E. by S.	114	....	Fine.
12th	29·912	89·7	75·9	84·2	76·3	70	E. by S.	109	....	Do.
13th	29 913	89·3	76·2	83·3	76·0	72	E.	105	....	Do.
14th	29·931	89·7	75·6	83·8	76·3	71	E. N. E.	159	....	Do.
15th	29·934	89·2	76·8	84·2	75·8	69	E. N. E.	135	....	Do.
16th	29·893	89·5	77·9	84·3	76·0	67	N.E. by E.	176	....	Fine, with passing clouds.
17th	29·882	89·5	77·5	84·5	74·9	64	N. E.	213	....	Do.
18th	29·902	89·0	77·1	83·6	74·1	64	N.E. by N	243	....	Light clouds.
19th	29·890	88·6	74·2	82·9	74·4	67	N.E. by E.	154	....	Cloudy. [6¼ P. M.
20th	29·888	87·1	77·4	82·4	74·4	69	N. E.	224	0·22	Overcast. Rain from 5 to
21st	29·875	83·5	76·0	78·8	76·4	89	N. E. by N	112	0·70	Do. Frequent showers before sunrise. Rain at 10 A.M. & 11¼ A.M.
22nd	29·874	86·6	76·6	82·7	77·3	79	N. E.	122	....	Cloudy. [5½ P.M.
23rd	29·865	86·7	77·2	82·8	77·3	78	E. by N.	101	0·09	Light clouds. Shower at
24th	29·866	87·3	78·5	83·0	77·4	78	E. by S.	104	0·01	Passing clouds.
25th	29·865	87·3	77·9	83 5	77·2	76	E.	123	0·05	Do. Rain after 11¼ P. M.
26th	29·891	85·6	74·8	80·0	76·7	86	N. N. E.	76	0·96	Cloudy, with fine intervals. Heavy rain at 1¾ A. M., and before sunrise.
27th	29·880	87·4	75·4	81·3	76·4	80	N.E. by E.	102	....	Fine, with passing clouds.
28th	29·900	85·6	73·9	80·2	72·7	70	N.E. by E.	117	....	Passing clouds. [P.M.
29th	29·884	86·9	74·9	81·3	74·7	74	N. E.	153	0·16	Chiefly cloudy. Rain at 11¼
30th	29·862	83·6	73·1	79·4	75·6	84	N.	201	2·56	Overcast. Heavy rain before 5½ A.M., and at 11½ P.M.
31st	29·869	84·7	73·9	77·6	74·7	87	N. N. E.	59	0·46	Passing clouds. Rain at 8¾ A. M.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the Sea, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of November,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·852	87·5	75·2	81·9	76·6	79	E. by N.	90	......	Chiefly cloudy.
2nd	29·833	88·8	74·9	78·6	75·5	87	S.	106	1·46	Do. A heavy thunder storm, with rain, from 6 till 8½ P.M.
3rd	29·879	85·5	74·1	79·9	76·6	86	W. by N.	88	0·11	Cloudy. Shower at 6¾ A.M Heavy rain at 11¾ P.M.
4th	29·907	86·8	73·7	78·2	75·5	88	N. by E.	95	0·80	Day cloudy; night fine. Rain until 4¾ A.M., and at 3 P.M.
5th	29·908	84·8	74·6	80·5	75·4	80	N. N. E.	140	......	Cloudy, with fine intervals.
6th	29·913	85·1	74·9	78·8	75·1	84	N. by E.	165	0·33	Overcast. Rain between 4½ and 6 A.M.
7th	29·920	83·5	75·3	78·9	76·6	90	N. by W.	161	0·31	Cloudy. Frequent showers from ½ to 10½ A.M., and from 7¾ to 10½ P.M.
8th	29·893	84·4	74·9	78·3	71·0	71	N.	163	......	Light clouds.
9th	29·896	84·0	69·3	75·6	67·8	68	N. by W.	121	......	Light haze.
10th	29·883	83·6	66·5	74·5	66·1	65	N. N. W.	113	......	Fine.
11th	29·905	85·2	66·4	74·9	68·3	72	N. by W.	97	......	Do.
12th	29·890	86·2	67·6	75·9	69·1	72	N. by E.	113	......	Light clouds.
13th	29·898	85·2	68·2	75·1	68·5	72	N. by E.	133	......	Light clouds: fine night.
14th	29·943	84·9	67·5	75·1	66·6	64	N. N. E.	102	......	Chiefly fine.
15th	29·966	85·0	66·6	76·8	69·1	68	N. N. E.	124	......	Fine.
16th	29·978	85·0	69·9	78·5	73·5	79	N. E.	101	......	Do.
17th	29·934	85·8	72·6	79·9	75·9	84	N.E.byE.	150	......	Passing clouds.
18th	30·009	85·2	75·7	80·5	75·0	78	N. E.	187	0·03	Cloudy. Shower at 10¼ P.M.
19th	30·046	80·0	74·0	76·4	74·4	91	N.E.by N.	141	0·67	Overcast. Frequent showers: heaviest at 4¼ A.M.
20th	29·988	83·0	73·1	77·6	74·4	86	N. by E.	178	0·88	Chiefly overcast. Showery. Heavy rain at 1½ A.M.; 7 and 8¾ P.M.
21st	29·926	83·6	73·2	78·3	74·9	85	N.E.by.N	191	0·75	Cloudy. Heavy rain from 1 to 2 A.M. Showers at 7½ and 9½ A.M., and at 6¼ and 9½ P.M.
22nd	29·929	83·1	75·1	79·3	74·0	78	N. E.	192	......	Passing clouds.
23rd	29·953	83·8	73·5	79·7	74·1	77	N. by E.	284	......	Chiefly overcast.
24th	29·880	82·1	73·5	78·6	73·5	79	N.	376	0.11	Overcast. A strong breeze set in from the North at 8¼ A.M. Rain at 11½ P.M.
25th	29·761	77·0	72·0	73·7	72·5	94	N.	464	4·73	A northerly gale blowing all through the day. Rain from midnight to 4 A.M., and from 9 A.M. to 8½ P.M.
26th	29·646	79·7	69·1	75·0	73·3	92	N. N. E.	700	4.36	A cyclone passing southward of Madras, causing a heavy gale throughout the day. Greatest wind 43 miles per hour, at 9½ P.M. Rain all day: heaviest from 4¾ to 6½ A.M., and from noon till 7 P.M.
27th	29·883	78·1	71·9	73·5	72·3	94	S. by E.	268	3·16	High wind and heavy rain steadily decreasing up to 9 A.M. Light wind and fine sky with passing clouds in the later part of the day.
28th	29·950	82·0	70·7	76·0	74·7	95	S. S. E.	68	......	Fine, with passing clouds.
29th	29·976	82·3	73·0	77·3	75·0	90	N. E. by E	86	......	Passing clouds.
30th	29·951	82·8	74·7	77·6	74·8	88	N.E.by E	104	0·06	Do. with rain between 6 and 7¼ A.M.

N. R. POGSON, *Government Astronomer.*

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of December,* 1865.

1865.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·936	81·9	74·7	77·7	74·1	85	N.E.byN.	128	0·11	Passing clouds with rain between 6 and 7¼ A. M.
2nd	29·945	81·6	72·3	76·5	71·3	78	N.E.byN.	155	....	Chiefly cloudy.
3rd	29·939	81·5	71·7	76·4	72·8	85	N.	200	....	Nearly overcast.
4th	29·832	76·9	73·4	75·4	73·8	93	N.E.byN.	399	3·14	Overcast & stormy. *See note.*
5th	29·951	81·7	73·5	77·2	75·1	91	E.	137	1·33	Unsettled and rainy until noon. Passing clouds for the rest of the day.
6th	30·000	82·6	74·1	75·7	74·4	94	N.E.byE.	142	0·92	Passing clouds. Light showers before sunrise. Rain at 6¼ P.M.
7th	30·003	81·1	73·7	77·9	72·0	75	N.E.byN.	178	0·07	Shower at 4 A. M. Passing clouds.
8th	29 988	81·8	71·1	76·0	72·5	85	N.E.byN.	126	....	Passing clouds.
9th	29·998	82·5	73·1	76·9	73·2	84	N.E.byE.	111	....	Fine, with passing clouds.
10th	30·027	81·3	71·5	76·8	72·0	80	E. N. E.	77	....	Do. do.
11th	30·013	82·1	72·0	77·1	72·3	80	N. E.	143	....	Chiefly fine.
12th	30·013	81·9	71·7	77·4	72·0	81	N.E.byN.	186	....	Fine, with passing clouds.
13th	30·001	81·7	70·6	76·2	69·7	73	N.E.byE.	151	....	Do. do.
14th	30·029	80·9	70·7	76·3	68·1	66	N.E.byE.	204	....	Chiefly fine.
15th	30·053	80·1	73·0	76·5	67·8	65	N. E.	210	....	Fine.
16th	30·022	81·2	69·8	76·4	68·6	68	N. E.	216	....	Do.
17th	29·996	80·8	71·2	77·2	67·9	63	N. E.	197	....	Do.
18th	29·990	81·6	72·0	77·0	69·1	67	N.E.byN.	231	....	Passing clouds.
19th	30·000	80·7	74·0	77·0	67·6	62	N.E.byN.	262	....	Do.
20th	30·025	81·3	71·0	77·4	69·2	66	N.E.byN.	259	....	Do.
21st	30·070	81·4	75·4	78·0	70·0	68	N.E.byN.	291	....	Do.
22nd	30·078	81·1	75·9	78·0	68·7	63	N. N. E.	295	....	Do.
23rd	30·052	81·6	69·3	77·0	69·4	69	N.E.byN.	232	....	Do.
24th	30·027	81·0	75·3	77·5	69·5	68	N. E.	272	.....	Do.
25th	30·025	81·5	70·1	76·6	69·0	69	N. N. E.	203	....	Passing clouds.
26th	29·986	80·6	71·1	76·4	69·4	71	N. N. E.	177	....	Chiefly overcast.
27th	29·953	81·2	69·8	74·3	69·6	79	N. N. E.	138	....	Fine, with passing clouds.
28th	29·943	80·6	68·4	73·4	68·6	79	N. N. E.	136	....	Do. do.
29th	29·974	79·7	68·0	73·8	69·0	79	N. N. E.	153	....	Do. do.
30th	30·003	80·5	69·0	75·8	70·2	77	N. N. E.	183	....	Do. do.
31st	29·997	81·3	74·2	77·3	69·8	69	N. N. E.	258	....	Chiefly fine, passing clouds.

A moderate gale blew on the 4th instant, commencing about day-break, caused most probably by another cyclone passing far to the South of Madras. The Barometer completely reduced and corrected for known hourly variation, unchanged at 29·82 inches throughout the *day, precluding all fear of* a storm at this place. The greatest volocity of the remained *wind was 27 miles* per hour, from 4 to 5 P.M. ; and it averaged 17 miles for above 24 successive hours.

Rain fell heaviest about 4 P.M. on the 4th, and 3¼ A.M. on the 5th ; in all, nearly *inches distributed over 23 hours.*

PART IV.

MEDICAL INTELLIGENCE.

A Chalybeate Spring at Bangalore.

Dr. Mackenzie, C. B., when Officiating Principal Inspector General of Hospitals, kindly brought the following papers to the notice of the Editor of this Journal. The documents are extracted from the Proceedings of the Medical Board, but nothing further has been found on the subject. Dr. Mackenzie, upon his return to Bangalore, instituted a search for the well alluded to, and thought it must be one of three or four from which he obtained some water for analysis by the Chemical Examiner. The water is now under examination, and we trust we shall be able to give the results in our next number.

Fort St. George, 24th March 1817.

PUBLIC DEPARTMENT.

To the President and Members of the Medical Board.

GENTLEMEN,--I am directed by the Governor in Council to transmit to you the accompanying copy of a letter from Captain W. Garrard at Bangalore, and to desire that you will cause such a chemical analysis to be made of the mineral water therein alluded to, either upon the spot or otherwise as the case may require, for ascertaining with precision the medicinal qualities of the spring, as may enable you to give a professional opinion respecting its probable effects for the cure of invalids.

2nd. You will also endeavour to obtain an authentic account of cases in which the use of the water is stated to have had a beneficial effect.

I have the honor to be,
Gentlemen,
Your most obedient servant,
(Signed) D. HILL,
Secretary to Govt.

To the Chief Secretary to Government, Fort St. George.

Sir,—I have the honor to report, for the information of the Right Honorable the Governor in Council, the existence of a mineral spring at Bangalore, which, from the knowledge already obtained of its medicinal virtues, bids fair to become an object of the utmost importance to the community of British India.

The original discovery was made by me some months ago, and I have delayed submitting the subject to Government until fully satisfied by experience of its meriting their attention. The water is a chalybeate, being strongly impregnated with Carbonate Iron, and the addition of a little common salt renders it an active aperient.

Should Government be induced to direct a regular chemical analysis to be made of the above on the spot, I feel assured, from the information already in my possession, that the result will prove the value of the discovery, and as the above is my private property, I have only to add that such troops of His Majesty or the Honorable Company whose cases may require the mineral may at all times have free access to it under the control of their Medical officers, in consideration of which, and in the event of the analysis and report of the Medical Board proving favourable, I humbly trust that Government will be pleased to grant to me an adequate monthly or annual allowance, subject, if they desire it necessary, to the final decision of the Honorable Court of Directors, and to continue only so long as their troops have access to the mineral in the manner above proposed.

I have the honor to be,
Sir,
Your very obedient Servant,
(Signed) W. GARRARD,
Captain of Engineers.

Bangalore, 13th March 1817.

(A true copy.)

(Signed) D. HILL,
Secretary to Government.

Fort St. George, 13th October 1817.

To the Right Hon'ble W. Elliot, *Governor in Council.*
&c. &c. &c.
Fort St. George.

Honorable Sir,—Para 1. With reference to a letter which we had the honor to receive from the Secretary to Government in the Public Department, dated 24th March, together with its enclosure from Captain Garrard, on a subject of a mineral spring in the garden of that gentleman at Bangalore, we beg leave to state to your Honor in Council, that we directed the Superintending Surgeon of the Mysore Division to request that Mr. Surgeon Heyne (who was then at Bangalore) would analyse and report upon the chemical qualities of that water. We at the same time desired that the Medical Officers of the Mysore Division should be directed to report the result of their observations regarding the medicinal virtues of the chalybeate spring in the various diseases and sequelæ of fevers to which the troops are so liable in many parts of the Mysore country.

2. We have now the honor herewith to submit a report (No. 1) from Mr. Heyne, on the constituent part of the springs in Captain Garrard's garden. From this it would appear that ten pounds of the fluid contain—

Oxyde of Iron............	7·5
Carbonate of Lime.........	0·5
Alumina....................	1·0
Sulphate of Lime............	2·0
Muriate of Lime............	5·7
Do. of Soda	5·3
Grains...	22·0

3. The mode adopted by Mr. Heyne to determine the proportion and nature of the solid contents of this Spa, leave little doubt as to the correctness of the analysis which he has made in this respect. With regard, however, to the elastic fluids which it contains, his conclusions appear to us less satisfactory, and we are disposed to concur in opinion with Dr. Greig from the brilliancy of the water when conveyed to this place in well corked bottles, and from the very rapid deposition of an oxyde of iron upon being exposed for a short time to the air, that the proportion of carbonic acid is greater than Mr. Heyne has considered it to be.

4. We conceive a minute enquiry into the quantity of carbonic acid to be of great importance, and we accordingly directed the attention of the Superintending Surgeon of Mysore most especially to this subject. Independently of the great value of carbonic acid as a tonic and stomachic, it is a vehicle in which the various modifications of iron are introduced into the system with the greatest advantage.

On this consideration we look with anxiety for the essay promised by Doctor Heyne, in which a minute enquiry into these points will not, we trust, be overlooked.

5. The analysis afforded by Dr. Heyne, of the Bangalore Spa, proves it to be one of the most powerful Chalybeate springs with which we are acquainted. As the saline ingredients are too minute to add to its medicinal powers, we are disposed to place it with Dr. Greig amongst that class of mineral waters which Dr. Saunders, in

his valuable treatise on this subject, has termed the simple Carbonated Chalybeates—and as waters impregnated with this active metal have been in high estimation in Europe, as powerful tonics, we shall take the liberty of laying before your Honor in Council a table shewing the proportions of iron in the Mysore Spa compared with the well known springs possessing similar virtues in Europe.

6. With regard to the medicinal effects of the chalybeate at Bangalore, we have great satisfaction in submitting to your Honor in Council the distinct and able report of Dr. Greig, of His Majesty's 22nd Dragoons, on this subject.

7. From this interesting document, it will appear that the powerful tonic effects of the chalybeate were beneficially evinced upon cases of debility and indigestion, the consequence of severe attacks of fever; in weakness and great relaxation of the bowels brought on by long continued dysentery, and that it also proved serviceable by restoring tone to the system in obstinate and long continued ulcers. In short, that it manifests in the diseases of this country all the tonic powers, giving strength, nervous energy, and greater vigour to the functions, which waters of the same class do in Europe.

8. Dr. Greig has dwelt so fully upon the general medicinal effects of chalybeate waters, that it may be deemed almost superfluous to offer any further observations on this subject. We shall, however, take the liberty of briefly submitting to your Honor in Council a few remarks upon those diseases in which the Bangalore Spa promises to be generally useful, more particularly as affecting the Military branch of the service.

9. The operation of chalybeates upon the system is to increase its tone, to excite the stomach to a more healthy action, and to impart vigor to all its secretions and functions.

10. The chalybeate principal being more abundant in the Bangalore spring than in most of the chalybeate water generally resorted to in Europe, we have reason to conclude, and we have no doubt that a further experience of its effects will confirm our conclusions that this will prove to be one of the most powerful and useful tonics of this valuable class of medicines.

11. Experience has already decided that it is eminently serviceable in those cases of general debility, and that peculiar mobility of the system which renders a large proportion of the soldiery so liable to relapses of fever and so long unfit for general service after attacks of the Mysore fever. In this point of view, we consider the discovery of this chalybeate and its medicinal effects as one of great importance, and one which promises to be the means of speedily restoring health to soldiers, whom it has heretofore often been deemed necessary to remove entirely from the Mysore country, in order effectually to remove the debility and tendency to relapse.

12. We are disposed to anticipate great advantages in the judicious exhibition of this chalybeate in various cachectic diseases terminating in dropsy, a form of disease that has proved destructive to the native soldiery, who have suffered from long and repeated returns of the endemic fever of Mysore.

13. The chalybeate will prove beneficial in relieving and ultimately removing that relaxation of the stomach and impaired digestion, so frequently the consequence of a long residence in a hot and relaxing climate. In this respect the temperature of the Mysore climate and the open clear country around Bangalore must greatly aid the favorable effect, and is likely, in many cases, to obviate the necessity of a sea voyage. In short, we are authorized by analogy to conclude that, under a judicious and skilful mode of administering these waters, they will prove serviceable in a very large proportion of diseases of debility, unattended by visceral obstructions or unaccompanied by symptoms of fever or increased heat.

14. In a letter addressed to the Superintending Surgeon of the Mysore Division, extract of which we beg leave herewith to submit, we requested that a *comparative* trial might be made of the Bangalore Spa with other tonics. The frequent removal of troops has probably prevented the Superintending Surgeon from instituting this desirable experiment. We feel confident, however, that the chalybeate water will be found to act generally as a more powerful stimulus in restoring healthy action than any which is now in use.

15. So soon as we shall be furnished with the comparative statement from the Superintending Surgeon of Mysore and the promised essay from Dr. Heyne, we shall submit to your Honor in Council a general history of the Bangalore Spa, its medicinal effects and the most approved manner of exhibiting it in the various diseases in which it has proved useful.

16. We cannot conclude this report without respectfully soliciting the attention of your Honor in Council to the highly important discovery which Captain Garrard has made, in bringing to the notice of the public a mineral water of great service, and which has heretofore been a desideratum in this country. We hope we may also be permitted to notice the liberality with which he has enabled the numerous invalids in the army to benefit by his valuable discovery.

17. We have no hesitation in offering it as our opinion that the Bangalore Spa will prove of great service to numerous cases of debility, consequent to the severe fevers and fluxes which are endemial in many parts of Mysore. We conceive, too, that the discovery of this Spa may be the means of preserving to Government the services of many Officers, Civil or Military, by obviating in cases of debility

the necessity of a sea voyage which might, prior to the discovery of the mineral water in Captain Garrard's garden, have been deemed unavoidable.

(Signed) A. WATSON, M.D., P. M. BD.
(„) W. HARRIS, M.D., 2ND M. M. BD.
(„) A. BOSWELL, 3RD M. M. BD.

FORT ST. GEORGE,
Medical Board Office, 13th October 1817.

To the Superintending Surgeon of the Mysore Division.

SIR,—I have the honor to acknowledge your letter of the 26th May, giving cover to one from the Secretary of the Medical Board to you under date the 19th, in which the Board have done me the honor to select me for the analyzation of the mineral water at this station, situated in Captain Garrard's garden.

I beg leave to state that I have been very assiduously employed for these two months in this duty, on the water from a well in a garden belonging to Captain Garrard, the well first discovered having lost the chalybeate property which it originally possessed, solely, I understand, owing to the injudicious proceedings of the workmen employed in steyning it.

After the minutest investigation frequently varied and repeated, I find that this mineral water in 10 lbs. contained—

Oxyd of Iron	7·5
Carbonate of Lime	0·5
Alumina	1·0
Sulphate of Lime	2·0
Muriate of Soda	5·7
Do. of Lime	5·3
Grains	22·0

And gaseous substances, by estimation 45 cubic inches of Carbonic Acid Gas.

In one pint there is, of course—

Oxyd of Iron	0·75
Carbonate of Lime	0·05
Alumina	0·10
Sulphate of Lime	0·20
Muriate of Soda	0·57
Do. of Lime	0·53
Grains	2·2

and 4·5 cubic inches of carbonic acid gas.

I shall now state briefly how I proceeded to obtain the solid contents and their proportions. By evaporation I had found them to amount (in 10lb.) in the aggregate to 23 grains, and by the generally known reagents ascertained that they consisted of the substances mentioned in the above statement.

To separate the carbonates of earth and iron, 10lb. of water were kept in a state of ebullition for about a quarter of an hour, after which the deposit filtered and dried, was found to weigh on an average 8 grains in different experiments.

To produce these substances separately the whole sediment was dissolved in muriatic acid when the alumina was left undissolved, and weighed about 1 grain.

The iron was precipitated by ammonia and after it the lime, by sulphuric acid, from the muriatic solution; the latter yielding a quantity of sulphate of lime which shewed grains 0.5 of carbonate of lime.

The iron was re-dissolved in muriatic acid and precipitated, by carbonated kali, and after being dried in a heat of 200 Faht., it weighed on an average grain 7.5.

The rest of the solid contents in the quantity of water remaining (which is nearly as pure as rain water) were obtained by evaporating it to a few ounces, when the sulphate of lime showed itself by falling to the bottom and increased by farther slow evaporation and by an addition of some alcohol, weighed as stated in amount generally about 2 grains. There remained only now the muriates of lime and soda, for which the whole was reduced to dryness and weighed about 11 grains. It was a saline substance which required much dispatch in the operations (of weighing) as it powerfully and rapidly attracted the moisture of the air. The muriate of lime was separated by alcohol, and the remaining salt, consisting of cubic crystals of muriate of soda, weighed 5.7. So that the muriate of lime must have amounted to grains 5.3. The base of lime was ascertained by sulphuric acid dropt into a watery solution of it, which gave sulphate of lime—the muriatic acid had been found by nitrate of silver.

The absence of all perceptible signs of carbonic gas showed that none exists in it free or *uncombined*, so whatever quantity there may be of it, must be *combined with a base.* Now Thomson in his chemistry expressly says, that carbonic acid *uncombined* only or *combined with a base in excess*, may be detected by the following tests :

1. By lime water, which occasions a precipitate which is soluble with effervescence, in muriatic acid.

2. By litmus, which is fugaciously reddened, &c., and as both tests have been tried and demonstrated its presence, it must, of course, exist in this water *combined* with a base in excess.

Kirwan again maintains that when carbonic acid is ***combined in excess*** with a base, it must amount to $\frac{1}{8}$ of the bulk of water to produce that effect, viz., that of reddening litmus, &c, but $\frac{1}{6}$ of 27 the cubic inches in a pint of water is exactly 4.5 which are consequently the number contained in a pint of the chalybeate.

These are the general results of my analysis, which I beg you will have the goodness to state to the Medical Board, to whom, after my arrival at Madras, I shall do myself the honor of presenting my essay on this subject.

The daily rains, at present, which may be expected to continue for many months, prevent any further experiments upon the chalybeate, and indeed I scarcely know what more remains to be done unless it should be to prove the quantity of carbonic gas by direct experiments with the pneumatic apparatus, but which I conceive scarcely necessary. The great quantity of iron (8 times as much as in the Tunbridge waters) must render it a powerful tonic, and such I have found it in my own case, for about a month ago I considered myself so low in health that I scarcely hoped to be able to remain much longer in India, where, after the steady use of this mineral water, I am happy to say I feel now equal to any laborious exertions.

(Signed) BENJN. HEYNE, M. D.,
Surgeon and Naturalist of
the Honorable Company.

BANGALORE, 2nd June 1817.

FORT ST. GEORGE, 13TH OCTOBER, 1817.

To the Superintending Surgeon of the Mysore Division, Bangalore.

SIR,—In compliance with the wishes of the Medical Board, as expressed in their Secretary's letter to you, dated the 19th ultimo, I have the honor to inform you that for several months past I have paid particular attention to the effects of the Bangalore Spa, of which, through the liberality of the Proprietor, Captain Garrard, I have been enabled to make a trial on an extensive scale in the Hospital under my charge; the result has been particularly favorable, and may encourage us to hope that what has hitherto, in this country, been a great desideratum, is at length likely to be supplied.

Mineral waters have long been employed in the cure of diseases, and the high repute in which they are at present held both by Medical practitioners and the public at large, is a strong proof that the beneficial effects supposed to result from their employment are well founded. When we consider their great importance in respect to medicinal properties, and recollect that their existence has been discovered, and that their active power has been beneficially employed in almost every country on the surface of the Globe, it becomes a matter of surprize and regret, that throughout the vast extent of British India there is not, at this day, if my information be correct, any mineral spring resorted to or celebrated for its efficacy in the cure of disease. We cannot suppose that his circumstance arises from nature having withheld from this country gifts which she has distributed bountifully to others, for we know that water in general partakes more or less of the properties of the strata through which it passes, and also that the mineral substances from which medicated springs derive their virtues, are found as perfectly and plentifully here as elsewhere on the surface of the earth. We may reasonably conclude, therefore, that mineral waters will be found to exist as abundantly in India as in other countries, whenever the industry and ingenuity of scientific men shall be directed towards their discovery.

The Bangalore Spa may be classed with what Dr. Saunders, in his treatise on Mineral Waters, calls simple carbonated chalybeate, which differs from spring water only in holding a quantity of carbonate of iron in solution, and of which the Tunbridge Spa affords an example. The water has been carefully analyzed by Dr. Heyne, and as his report on the subject is already before the Board, it is unnecessary for me to enter into any long details respecting its chemical composition. I may remark, however, that the quantity of oxyde of iron found to exist in the water (being 3-4ths of a grain in each pint) exceeds that of any simple carbonated chalybeate with which we are acquainted, and, consequently, its tonic power may be expected to prove proportionably great.

Iron, in mineral waters, is most commonly found combined with carbonic acid, and this is generally considered, its most useful form being that which is most easily decomposed and most readily acted upon when taken into the stomach. The quantity of carbonic acid contained in the water has not been ascertained with accuracy, owing to the want of a pneumatic apparatus, but it is estimated by Dr. Heyne to amount to 1-6th of the bulk of the water or 4-5 cubic inches in a pint, because the water, when added to Infusion of Litmus, fugaciously reddens it. This estimate is founded on a calculation of Kirwan, in his Essay on the Analysis of Mineral Waters, but it appears to me to be defective, for, in one part of his treatise, Kirwan asserts that Infusion of Litmus is not reddened, unless the water contains 1-6th of its bulk of carbonic acid in a *semi-combined state*, whereas Dr. Heyne's calculation allows only 1-6th for the whole quantity of carbonic acid *both combined and semi-combined;* this part of the analysis, therefore, must be considered as still very defective, and I have no doubt that when enabled to complete the investigation with the assistance of a pneumatic apparatus, future experiments will discover the proportion of carbonic acid to be greater than what is above stated. I have been thus particular on this point, as it is considered to be one of great importance, and I have taken the liberty of differing from Dr. Heyne on this point alone, as it is the only part of his analysis which is founded on mere calculation, and which has not been ascertained by actual and repeated experiments.

The analysis of the Bangalore Spa and the well known effects of similar springs in other parts of the world lead us to expect it to prove a powerful tonic, and such I have invariably found it in the numerous trials which I have lately made of it. Its effects when taken into the stomach are to quicken the pulse, to cause a glow of heat over the body and a transient determination to the head, occasionally amounting to vertigo. This last effect is most observed in those of a full habit, particularly on drinking the water for the first time. When the stomach is foul, the chalybeate sometimes produces nausea, and when an undue proportion of bile is contained in the bowels, it frequently purges briskly, but neither of these is the proper effect of the water, and, therefore, to prevent this occurrence, it seems advisable in general to exhibit a purgative before commencing the use of the Spa. Amongst its more immediate effects, we may also enumerate that of increasing the cuticular and urinary discharges. Its more gradual or remote effects are to increase the tone of the stomach and bowels ; to improve the appetite and strength ; to promote the deficient secretions ; and to invigorate the system at large ; frequently it renders the alvine evacuations of a dark colour—a circumstance in itself of little consequence, but which requires to be mentioned in order to prevent unnecessary alarm on the part of the patient. From the effects enumerated, the Bangalore chalybeate may be expected to prove a valuable remedy in most cases of debility and relaxation, requiring the use of tonics and unconnected with visceral obstructions ; but even in certain cases of the latter description, I conceive that it may prove useful if a small quantity of sulphas sodæ or sulphas magnesiæ or a mixture of both be added, so as to communicate a purgative quality to the water, similar to that of Cheltenham.

My experience of the effects of the Bangalore Spa has been, in a great measure, confined to cases of delibity, arising from severe attacks of fever and dysentery, of which the return of a sickly detachment of the Regiment from field service in March last furnished me with a variety of examples. In cases of fever, after all acute symptoms had subsided and general debility and want of appetite were the only remains of the disease, the chalybeate given at first in the quantity of half a pint twice a day, and afterwards increased to a pint and a half in the course of the day, was attended with the very best effects, and in every instance effected speedy cure when I first made trial of it. In convalescent fever cases I gave at the same time a small allowance of wine, but finding the effects of the water alone sufficiently powerful, I have latterly trusted entirely to its tonic powers, and in no instance have I been disappointed.

By way of illustrating these observations, I shall now give a short detail of a few of the cases of fever treated in Hospital.

Case I.—Corporal Wilkinson, Æt. 29, was attacked with bilious fever on the 4th of March last, when on the route from Bellary to Bangalore, with a detachment of Her Majesty's 22nd Dragoons. The symptoms being urgent, general blood-letting was employed at the commencement of the disease; the bowels were freely opened, and the patient was put under a course of calomel combined with antimonial powder, which, as the functions of the liver were considerably deranged, was continued until the mercury affected the mouth. On his arrival at Bangalore, on the 23rd of March, the patient came under my care in a state of great debility, with a sallow countenance, white tongue and almost total want of appetite.

For the first three days after his admission into hospital, mild aperients were given, so as to act moderately on the bowels, after which he commenced the use of the chalybeate in the quantity of half a pint twice a day. He had, at the same time, a light and nourishing diet, and was allowed two glasses of Portwine after dinner. On the 29th of March the quantity of water was increased to half a pint three times a day, and under this plan of treatment, so rapid was the patient's recovery, that on the 4th of April his appetite and strength were completely restored, and he was discharged from hospital to resume his duties.

Case II.—John Bristow, Private Dragoon, Æt. 21, was admitted into hospital on the 7th April last complaining of head-ache and vertigo, thirst, occasional nausea, pains in the limbs, general langour, prostration of strength and appetite. Pulse 100, soft ; skin hot ; tongue dry and white ; bowels regular ; had been complaining five days.

The stomach was cleared by a dose of Ipecacuanha, after which a purgative was given, and it was repeated on the three following days. On the 11th the head-ache, vertigo and pains in the limbs had nearly left him, but he continued extremely weak and had little or no appetite. His pulse calm and moderate ; tongue moist but white. He was ordered to take a pint of the chalybeate, with a scruple of epsom salt dissolved in it three times a day.

12*th.*—The water operated by stool three times yesterday ; appetite improves.

Rep. Aq. Chalybeate cum Magnesiæ sulph. every 4 hours.

The water has been continued, and causes two or three alvine evacuations daily, which are of a dark colour. Tongue moist and nearly clean ; appetite and strength daily improving.

Cont. Aq. Chalybeate ut supra.

16*th.*—Appetite, strength, and looks restored ; bowels open, and stools of dark colour.

Continue.

18th.—Feels perfectly well in every respect, and is discharged to-day.

Case III.—William Owens, Private Dragoon, Æt. 24. April 15th. Was admitted into Hospital on his return to quarters this morning in a state of convalescence from continued fever with which he was attacked when in camp near Chittledroog—about a fortnight ago. Has been treated with Purgatives, Calomel and Antimonial medicine; he now complains chiefly of debility and want of appetite; has head-ache and vertigo at times. Pulse 90, soft, skin moderate; tongue white; bowels open.

℥ Aq. Chalybeate Oss. Sulph Magnesiæ ℈ii. bis in die sumend.

16th.—The water operated by stool twice; he feels rather better.

Rep. Aq. Chalybeate ut heri.

18th.—Improving; bowels open.

Cont. Aq. Chalyb.

19th.—Appetite and strength improving; bowels open.

Cont. Aq. Chalyb. cum. Sulph. Magnesiæ *ter in die.*

22nd.—The water agrees well with him; his bowels are open; his looks improved; his appetite tolerably good, and he gains strength daily.

Cont. Aq. ut supra.

26th.—Improving daily.

Cont. Aq. Chalyb. ut supra.

30th.—The water has been continued, and his recovery has been progressive and satisfactory; he now feels perfectly well in every respect, and is discharged to duty.

Case IV.—James Jones, Private Dragoon, Æt. 24. On returning from camp, near Chittledroog, had a severe attack of bilious remittent fever, for which he was admitted into hospital on the 15th of April last. There being great determination to the head—blood-letting was employed, both generally and by means of leeches applied to the temples. Purgatives were also very freely administered. In the course of a few days, the fever having assumed a regular intermittent form, bark was given and had the effect of putting a stop to the paroxsyms; this medicine, however, was extremely nauseous to the patient, and considerably deranged his stomach and bowels, without tending, in any degree, to restore his strength and appetite. It was, therefore, laid aside, and he commenced the use of the Chalybeate on the 26th of April, in the quantity of half a pint twice a day. On the 29th, the quantity was increased to half a pint three times a day, and with the same good effects as in the cases above detailed; he regained his strength and appetite rapidly, and on the 5th of May, without the use of any other tonic, he was so completely recovered as to be enabled to return to his duty, I have employed the chalybeate successfully in a number of other cases of convalescence from fever, but as they were similar to the above, in most respects, it seems unnecessary to detail them.

In severe attacks of dysentery, when mercury has been pushed so as to affect the mouth and the straining, passing of blood, and other dangerous symptoms have subsided, there frequently remains a great degree of general debility, a want of appetite, and a loose and irregular state of the bowels arising from laxity and want of tone in the stomach and intestines. In this state I have employed the Chalybeate in a great number of instances and with the best effects. I gave it, as in the cases of fever above detailed, sometimes combined with a little of the sulphate of soda or magnesia, when the state of bowels seemed to require it—the latter combination is particularly required when there appears to be any tendency to obstruction in the liver.

In cases of this and the preceding disease, the restoration of health was speedy, and the period during which it was necessary to give the Chalybeate was short, scarcely, in any instance, exceeding a fortnight in chronic cases of disease; however, a much longer course is necessary, in order to give the water a fair trial.

In two cases of old and inveterate ulcers which were lately under my care, and in which, from long confinement in hospital, the health of the patient had suffered materially, I tried the effect of a course of the Chalybeate in the usual quantity, that is, beginning with half a pint twice a day, and afterwards increasing it to a pint and a half in the course of the day, which, I think, is as much as can, in general, be given, without affecting the head. In one of the cases, it produced a gradual amendment of health, and after a course of about two months' continuance, the patient was dismissed to his duty perfectly cured. Various tonics, particularly bark, has previously been used in this case without benefit. In the other patient, who was of a bilious habit, the water for the first fortnight purged excessively, causing four or five watery evacuations daily, afterwards it ceased to have this effect, but produced so much determination to the head, denoted by almost constant vertigo, that I was obliged to give up the use of the Chalybeate, and have recourse to wine and bark, which, with the assistance of an occasional purgative, gradually effected a cure. In the first of these cases, the Chalybeate appeared to agree with the patient better than the bark; in the other the reverse was the case.

In two cases of scrofulous enlargement and induration of the glands of the neck, I have given the Chalybeate a fair trial for upwards of months past, but it does not appear to me to have been of any service. I have tried it also in a few instances of general debility, impaired appetite, and irregular biliary secretion, the effect rather of long residence in India than of any permanent organic disease, and in such cases have generally found it highly beneficial, particularly when from one to two drachms of vitriolated soda or magnesia is added to the morning dose, so as to cause it to operate mildly on the bowels.

The above is a faithful detail of my experience of the effects of the Bangalore Spa. So far as it goes, it is highly favorable and induces me to believe, that under proper management, the Chalybeate water of this place is capable of producing all or most of the beneficial effects so well known to result from the use of those of Tunbridge, Scarborough, and Cheltenham; if a simple tonic is required, the water may be taken in its pure state, if a purgative and tonic, such as the Cheltenham water, is required, the addition of from one to two drachms of aperient salt to the morning dose will communicate the property; the water, when taken in its pure state for any length of time, is apt to induce constipation, on which account an occasional purgative will be necessary; the periods at which I have usually given the Chalybeate have been early in the morning and again in the course of the forenoon, and from half to three quarters of a pint has been the quantity usually given at each time.

It is necessary that the water be drank on the spot, because, like all other carbonated Chalybeate, it becomes decomposed on exposure to the air; even in well corked bottles this effect takes place to a certain extent, and in the open air so rapidly does it occur, that in the course of eighteen hours the water is found to have lost all its Chalybeate properties, the fixed air having escaped and the oxyd of iron being deposited in the form of a brownish yellow powder; this being the case, the site of the spring must be considered as particularly fortunate, for were we to search the whole of the peninsula of India, I believe no spot could be found, which, in respect to the general purity of its atmosphere, the coolness and salubrity of its climate, its congenialty to the European constitution, the nature of its vegetable productions, its society and amusements, combines so many advantages for the valetudinarian as the delightful station of Bangalore.

In concluding this report, I beg leave to observe that I do not, by any means, consider it as including all the diseases in which the Bangalore Spa is likely to be found beneficial. I have mentioned such only as have come within the range of my own experience, but it was my intention, as opportunities might offer, to have given it a trial in various other complaints, in which the Chalybeate springs of England are found useful, such as certain cases of Dyspepsia, chlorosis, some of the discharges peculiar to females such as Fluor albus and Menorrhagia, sterility proceeding therefrom, a relaxed and debilitated state of the uterine system, debility consequent upon long residence in India, irregular biliary secretion arising from the same cause, &c.

Being on the point of quitting this station to proceed with my Regiment on field service, I am unable, at present, to prosecute further inquiries on the subject, but I hope to be enabled to do so, and to report the result to the Medical Board at some future period.

(Signed) ROBERT GREIG, M.D.,
Acting Surgeon, 22nd Dragoons.

BANGALORE, 14th June 1817.

Extract of a letter from the Medical Board, to the Superintending Surgeon of the Mysore Division, dated 19th May 1817:—

In your letter of the 20th of May 1816, many of the Sepoys of the 12th Regiment, and a number of men of the 8th Regiment are reported to have rapidly recovered during the use of the water. It will readily occur to you, however, that convalescents removed from the unhealthy station of Seringapatam would, under any circumstances, re-gain health rapidly at Bangalore; to arrive, therefore, at any specific and useful conclusion on the subject under consideration the mode already suggested (of comparative trial) should, as far as practicable, be generally adhered to.

The Board, in conclusion, direct that with the view of eliciting every source of practical information regarding the qualities of a valuable mineral water so favorably situated, you will call upon all those Medical Officers in your superintendency, and who have resided for some time at Bangalore, to furnish you with a general report of the medicinal effects which they have observed to arise from the use of the Chalybeate water in Captain Garrard's garden, and that they will, at the same time, be pleased to state to you such detailed cases as may, in their judgment, tend to elucidate its value in particular cases of indisposition.

(True extract.)

(Signed) A. STEWART,
Secretary, Medical Board.

PUBLIC DEPARTMENT.

To the Medical Board.

GENTLEMEN,—I am directed by the Right Hon'ble the Governor in Council, to acknowledge the receipt of your letter of the 15th instant, with its enclosures, and to desire that you will take into consideration the measures which it may, in your judgment be most advisable to adopt with the view of deriving the advantage which the Mineral Springs at Bangalore may be calculated to produce,

(Signed) D. HILL,
Secretary to Government.

FORT ST. GEORGE,
29th October 1817.

Madras Apothecaries' Society.

Extracts from the Report of the Madras Apothecaries' Society, for the year ending July 31st, 1865.

Patron.

SURGEON S. MASON.

THERE are, at present, 53 Subscribers on the list.

There have been 22 Meetings held during the year, at which the maximum attendance of Members was 20, minimum average 12.

Work performed by the Society during the year, arranged according to the "*Plan of working.*"

I.—*Reading of original essays on various subjects in Medicine and the Collateral Sciences.*

1. Etiology of Cholera, (electric theory) by R. Wilkins.

2. On Epithelioma, by W. D. Stewart.

3. On Blood Coagulation, by R. Wilkins. He supposes that the electricity contained in the blood serves to keep it in the fluid state, and that its escape or alteration in quantity results in coagulation. Most, (if not all), of the facts and recorded experiments connected with the process seem to him to be more in harmony with this view than with any other.

4. Remarks on the medicinal products of the Cocos Micifera, by J. J. Wood.

5. On Pneumonia, by Caleb St. John Lawrence.

6. On Albuminuria. The several conditions under which albumen appears in the urine temporarily and persistently, by W. D. Hamilton.

7. On Medicine Chests; their construction, contents, &c. by J. J. Wood.

8. On the Causation of Uterine Action at the close of gestation, by R. Wilkins. Uterine action at this particular period comes on, as a consequence, he thinks, of the pressure exerted upon the uterine arteries during the latter months of pregnancy, and to the deterioration which the blood, circulating in them, undergoes from the great demand made upon that fluid for materials necessary for the development and growth of the fœtus.

He regards the act as differing in no material respect from ordinary spasmodic action.

9. On Dosg, Dog-bite, and Hydrophobia, by J. J. Wood. This paper was published in the last number of the *Madras Quarterly Journal.*

10. On the Causes of the Difference of Complexion in children of the same family, by Caleb St. John Lawrence.

11. A paper submitted by Mr. Harvey during the discussion on Cholera, being a letter from Mr. G. Norton to him on a modification of the well-known saline plan of treatment of that disease. Mr. Norton proposes to use salts similar to those contained in the serum of the blood, and in the same proportion. These are to be mixed with a certain quantity of albumen of egg and dissolved in water.

II.—*Reading of papers from Periodicals and recently published works on subjects new to the profession.*

1. An abstract of all that was lately published by Professor Simpson and others on Acupressure, by R. Harvey.

2. An abstract of the arguments of Professor Simpson in favour of Acupressure, by R. Harvey.

3. Chemistry and Pathology of the Urine according to the latest researches. Mr. Harvey has read portions of his summary on this subject at five different Meetings, and has not yet concluded.

III.—*Reading of detailed statements of instructive and interesting cases.*

There were only two cases read before the Society during he past year :

1. Case of Hepatic Abscess opening into the Pericardium, the sixth case on record : (subject, an European), by Mr. R. Harvey.

This case was published in the last number of the *Madras Quarterly Journal.*

2. Case of strongly marked Hemiplegia occurring in a Rajpoot Sepoy, Æt. 28, under the care of the late Physician General A. N. Magrath.

Treatment.—Active purgatives, followed by large doses of calomel combined with opium to ptyalism; blisters to occiput and nape of neck, with stimulating liniments to affected side. Recovery, perfect; discharged for duty 2 months and 2 days after admission, by J. J. Wood.

IV.—*Discussions or conversations on professional subjects as agreed upon from time to time by the Members.*

1. On Cholera; its etiology, prophylactic and therapeutic management. This subject occupied five evenings.

2. Delirium Tremens. The discussion of this subject was opened by remarks by Mr. R. Harvey, on its treatment as practised by Professor Blacklock.

3. On Atheroma.

4. On Griffith's Mixture, Podophyllin, Cannabis, Digitalis, Compound chalk Mixture, and Paterson's Pills.

V.—*Lectures or discourses, single or successive, in special departments of study.*

1. On the more important drugs of India, in 3 lectures, by J. J. Wood.

2. Remarks on Atheroma, by R. Wilkins. He regards Atheroma as the result of an effort on the part of nature to repair an injury done to an artery.

3. On the remedies used by the natives of Southern India in the treatment of ophthalmic diseases, by J. J. Wood.

4. Remarks on Galvano-puncture in aneurism, by R. Wilkins.

He urged, in order to avoid causing pain and to ensure speedy success, the necessity of thoroughly insulating the needles, except, of course, at the points, and the employment of pressure on the cardiac side as well during as in the intervals of the operation.

6. Remarks on the history and composition of the Treeak Farookh, by J. J. Wood.

VI.—*Exhibitions of Anatomical or other Drawings, original Diagrams, Models, Instruments, Drugs, &c.*

Two pieces of work were exhibited by Mr. Wood, one representing the liver, the other the boundaries of the inguinal canal. They were a compound of drawing and model, and could be easily made by the student himself.

Mr. Gorman exhibited a very complete case (private property,) containing the instruments, apparatus, and medicines necessary to the accoucheur. He also presented for inspection another case, complete in every respect for the midwife. They were both made according to his instructions in England.

Several medicine chests were shown to the Society by Mr. Wood; also a model of an *energent portable* one; the latter being a combination of pocket case and pouch. He recommended it to be made of leather in such a way that it could be either strapped round the waist or rolled up like a mattrass; thus possessing advantages over the heavy, unwieldy wooden one during an epidemic or while travelling.

A number of Indian drugs were also presented for examination by Mr. Wood, in connection with his lectures on that subject.

The New Sydenham Society.

THIS Society has just completed its seventh year. The Council have most efficiently performed their duties, and the high reputation which the works issued by the Society maintain, is a proof of the judgment which has been used in their selection for publication. The first object of the Society, viz., "the publication of translations of Foreign Works, Papers, and Essays of merit," has certainly been hitherto most effectively carried out; and there can be no doubt that there have been placed in the hands of the members some very valuable works, which most probably would never have appeared in an English dress, had it not been for the existence of such a Society as this. For instance, it is improbable that any Publisher would have undertaken the risk of the issue of translations of such works as Frerichs on Disease of the Liver, 2 vols.; Caspers' Forensic Medicine, in 4 vols.; the "splendid monograph" of Donders on the Anomalies of Accommodation and Refraction of the Eye; Van der Kolk on the Minute structure and Functions of the Spinal Cord and Medulla Oblongata, &c., &c. And even had their publication been undertaken, it is certain that they could not have been purchased at anything like their present small cost to members of the Society:

The following is a complete list of the works already issued.

For 1859.—*First year.*

1. On Syphilis in Infants. By Paul Diday. Translated by Dr. Whitley.

2. On the more important Diseases of Women and Children, with other Papers, by Dr. Gooch. Re-printed with a Prefatory Essay by Dr. Robert Ferguson. *With woodcuts.*

3. Memoirs on Diphtheria. Selected and Translated by Dr. Semple.

4. On the Minute Structure and Functions of the Spinal Cord, by Professor S. Van der Kolk. *With lithographs.* And by the same author:—

On the Minute Structure and Functions of the Medulla Oblongata, and on the Proxminate Cause and Rational Treatment of Epilepsy. Translated by Dr. Moore.

"This volume alone, illustrated as it is by such admirable engravings of the anatomy of the nervous system, is worth the whole annual subscription."—*British Medical Journal.*

5. Experimental Researches on the effects of loss of blood in inducing convulsions, by Drs. Kussmaul and Tenner. Translated by Dr. Bronner.

On the Process of Repair after Resection and Extirpation of Bones, by Dr. A. Wagner. Translated by Mr. T. Holmes. *With woodcuts.*

Three Memoirs on Glaucoma and on Iridectomy as a means of Treatment, by Professor von Gräefe. Translated by Mr. T. Windsor.

For 1860.—*Second Year.*

1. Memoirs on Abdominal Tumours and Intumescence, by Dr. Bright. With a preface by Dr. Barlow. *Numerous woodcuts.*

2. A Clinical account of Diseases of the Liver, by Prof. Frerichs, Vol. I. Translated by Dr. Murchison. *With colored lithographs, and numerous woodcuts.*

3. A Year-book of Medicine and Surgery, and their allied Sciences, for 1859.

4. A Fasciculus of an Atlas of Portraits of Skin Diseases; comprising three Plates, illustrating—

Favus; Tinea Tonsurans; Lupus Exulcerans.

For 1861.—*Third Year.*

1. A Hand-book of the Practice of Forensic Medicine, based upon personal experience, by Dr. I. L. Casperf, Vol. I. Translated by Dr. Balfour, of Edinburgh.

2. Czermak on the Practical uses of the Laryngoscope. Translated by Dr. Gibb. *Numerous woodcuts.*

On Thrombosis of the Cerebral Sinuses, by Professor von Dusch. Translated by Dr. Whitley.

Van der Kolk on Atrophy of the Brain. Translated by Dr. Moore. *Four lithographs.*

Radicke's Papers on the Application of Statistics to Medical Enquiries. Translated by Dr. Bond.

Esmarch on the uses of Cold in Surgical Practice. Translated by Dr. Montgomery. *Woodcuts.*

3. A Year-book of Medicine and Surgery for 1860.

4. A second fasciculus of the Atlas of Portraits of Skin Diseases. Three plates, illustrating—

Psoriasis Diffusa; Ichthyosis; Lupus Serpiginosus; Alopœcia areata.

For 1862—*Fourth Year.*

1. The Second Volume of Frerichs on the Liver.

2. A Year-book for 1861.

3. The Second Volume of Casper's Forensic Medicine.

4. A third fasciculus of the Atlas of Portraits of Skin Diseases. Three plates, illustrating—

Lupus Scrofulosus; Herpes Zoster Frontalis; Molluscum Contagiosum.

For 1863.—*Fifth year.*

1. The Aural Surgery of the present day, by Dr. Kramer. Translated by Dr. Power. *Woodcuts.*

2. A Year-book for 1862.

3. A Guide to the Qualitative and Quantitative Analysis of the Urine, by Drs. Neubauer and Vogel. Translated by Dr. Markham. *Lithographs and woodcuts.*

For 1864.—*Sixth year.*

1. The Third Volume of Casper's Forensic Medicine.

2. On the Anomalies of Accommodation and Refraction of

the Eye, with a preliminary Essay on Physiological Dioptrics, by Dr. Donders. Translated by Dr. Moore.

3. A Year-book for 1863.

4. A fourth fasciculus of the Atlas of Portraits of Skin Diseases. Two plates, illustrating—

Morbus Addisonii; Leukoderma.

For 1865.—*Seventh year.*

1. The Fourth Volume of Casper's Forensic Medicine.

2. A Year-book for 1864.

Other works to follow, probably—

Griesinger's Manual of Mental Diseases.

And a fifth fasciculus of Plates of Skin Diseases.

The whole of these works are in stock and can be obtained by new subscribers. Mr. Chipperfield, the Honorary Local Secretary for Madras, has on hand several complete sets from the year 1860, and can at once supply subscribers; and he will obtain the five volumes for 1859, for any gentleman who may desire to possess them.

Should an intending subscriber not care to commence his subscription until the present year (1866) he can still obtain the plates of skin diseases hitherto published, by the payment of thirty-six shillings for the four fasciculi.

The subscription is one guinea per annum, payable in advance on the first of January. Present members would do well to induce their friends to subscribe, as all additional subscriptions will go to multiply the number of works issued, for the Society fully meets the expenses with the number of members now on its books.

Mr. Chipperfield will be happy to receive the names and subscriptions of new members, as he is anxious to increase his list.

Arrangements have been made for the receipt of the Society's publications which renders the cost of freight a mere trifle, viz., from three to six annas per volume. Up-country subscribers must bear the additional cost of the transmission of the volumes from Madras to their stations. The plan hitherto pursued has been to pack them carefully in wax-cloth and dispatch by book-post. The postage varies from two to five annas per volume.

Order of the Madras Government on the Report of the Civil Hospitals and Dispensaries throughout the Madras Presidency, for the year 1864.

The above Report and its appended extracts refer to the operations of the Civil Hospitals and Dispensaries throughout the Presidency for the year 1864, but the statistical information therein contained, as to the number of persons under treatment, is still open to doubt, under the causes which led to the alteration of the heading "treated" to "seen and prescribed for," referred to in the Principal Inspector General's last report, but which only came into effect late in the year. The reports of future years will be free from this defect.

2. The statistics, however, show that there has been very little alteration in the gross number of persons under treatment, an increase of 8,732 in the number of out-patients being, in some degree, counterbalanced by a decrease of 1,057 in the number of in-patients, the latter being evidently the result of economical measures rendered necessary by the withdrawal of Government support from Provincial Institutions.

3. The General Hospital, the Government observe, is not expected to be ready for occupation until some time in the year 1866.

4. The Government are glad to find that the duty of providing for the expenses of their own local Dispensaries is being more and more recognized by the Mofussil communities, and that the year has seen so large an increase of the capital of these Institutions, which has risen from Rupees 1,64,806-13-6 to Rupees 2,95,482-10-7; while, of this, Rupees 2,34,780-12-4 is bearing interest. The charge to Government on account of the Mofussil Dispensaries has been reduced by Rupees 15,224-5-11, or to Rupees 71,337-4-11.

5. The Government agree with Dr. Cole in thinking that the time has now come for considering the mode in which these large sums should be invested. They do not forget that these funds are the product of private benevolence, and that they are not directly subject to Government control; but they still consider that, having respect to the fact that the Dispensaries generally receive from Government the services of a Medical Officer and medicines free of cost, they may, with propriety, insist upon the adoption of a course which will be to the benefit of the Institutions. They, therefore, resolve to instruct Collectors throughout the country to intimate to the various Committees for the Dispensaries, that the Government consider that monied capital accumulated in their hands should not be invested, either with private persons, or with Banks or other Agencies, but that as the accumulations may from time to time

amount to more than Rupees 1,000 in excess of current requirements, they should be invested in Government Securities.

6. The large collection for the Tinnevelly Dispensary has already been favorably noticed by Government.

7. The Government would be glad to believe that Dr. Cole's anticipations, "that the time is not far distant when every Talook in the Presidency will have a Medical Charity ministered to by an educated Native Doctor," were not too sanguine; but they have no hesitation in giving it as their opinion, that no more likely step to ensure this result can be taken, than that to which Dr. Cole refers in his 18th paragraph, viz., the training up, in local hospitals, of native youths, inhabitants of the District, in a knowledge of the treatment of diseases; and they view with very great approval the advance which has been made in Madura, and one or two other places, towards attaining this object.

8. The probability of ensuring medical aid for themselves and in their own neighbourhood, will most likely be necessary as an incentive before the inhabitants of the remote parts of districts will consent to tax themselves for the benefit of hospitals. The labors of the vaccination establishments, who will, so far as in them lies, without interfering with their legitimate duties, give the benefit of their general medical skill to those among whom their tours may extend, will, the Government doubt not, assist in developing a readiness to accept, and anxiety to obtain, the assistance of qualified Medical practitioners.

9. With respect to the different local Institutions, the Government proceed to remark upon those which call for special notice.

10. *Calicut.*—The Government consider that the wealthy district of Malabar should be able to make greater efforts than are apparent from its financial statement. The expenditure has exceeded the income (which includes donations) by a sum almost as large as the balance on hand at the close of the year; so that another year will probably show no balance. The Government will not object to allow an estimate to be prepared in the Department Public Works for the repairs needed to the hospital.

11. *Chicacole.*—The removal of the Policè from this Dispensary should be at once effected. A small house should be rented for the purpose, if no other arrangements are possible, and the Government consider that the Police Funds should bear this charge, and that it should not be, as it now is, practically thrown on the private benevolence of the district.

12. *Chittoor.*—The plans of the new hospital at this place are now before Government. The question of making use of the stones, alluded to by the Civil Surgeon, will be considered in the Department Public Works.

13. *Coimbatore.*—The remarks made in reference to Chicacole, on the subject of Police accommodation, will apply to this Dispensary also. The Government see no objection to the adoption of Dr. Davis' proposal for a Lying-in-Hospital. There can be no additional claim on Government on account of it.

14. *Coonoor.*—The Government do not consider that the circumstances of the Kotagherry station are at present such as to render the building of a Dispensary necessary.

15. *Cuddapah.*—The Government are glad to find that there is a prospect of an endowment for this Dispensary.

16. *Guntoor.*—They will be prepared to sanction the execution of the slight repairs necessary to this Dispensary in the Department Public Works on the receipt of an estimate.

17. *Vepery.*—The establishment of a separate ward as a Lock Hospital seems to have been a judicious step.

18. *The Lying-in-Hospital* continues to extend its sphere of usefulness. The Government notice with pleasure the large increase of cases treated.

19. *Madura.*—The great and spreading desire for European medical aid in this District is cause for much satisfaction. The Government have no objection to the proposed plan for selling European medicines, if the Principal Inspector General, Medical Department, considers it practicable to supply medicines, on payment, in sufficient quantity.

20. *Manaargoody.*—The progress of the Lying-in-Hospital at this station, and of the pupils, is satisfactory.

21. *Mangalore.*—The remarks on the treatment of the Police in the hospital, made under Chicacole, apply to this place. Immediate steps should be taken to rent a separate building for a Police sick ward, at the cost of the Police Department.

22. *Masulipatam.*—The Government have already sanctioned the repair, at the public cost, of the Dispensary, which was much damaged by the late cyclone. The arrangement made for the accommodation of the Police is approved, and should be carried out elsewhere.

23. *Ootacamund.*—The attention of the Inspector General of Police will be called to Dr. Smith's statement as to the Police clothing, and he will report to Government how the evil complained of may be remedied.

24. *Paliport Lazaretto.*—It has been resolved to abandon this building, and orders have already been issued for the provision of a proper hospital in a more convenient position.

25. *Rajahmundry.*—The Government trust that the Civil Surgeon's fears for the stability of this Institution are not well grounded, and that the subject of its support will be taken up by the Government official of the District.

26. *Tranquebar.*—The Government share Dr. Cole's difficulty in understanding why this Dispensary should be so poorly supported, while other Dispensaries in the District have been so generously upheld. The subject is one which may well engage the attention of the Collector.

27. *Vizagapatam.*—The energetic action of the Municipal Association is most satisfactory, and the general recourse to the Dispensary for relief is subject for congratulation.

28. It remains for Government to notice the subject of the expenditure of the Civil Hospitals at the Presidency.

29. The total expenditure on these Institutions was, in 1863, Rs. 1,68,113-0-4, from which sum 4,500 Rupees were to be deducted on account of Hospital stoppages. In the year 1864, the total amount of stoppages and sale proceeds of old articles was Rupees 5,190-1-10; but although the year was a decidedly healthy one, the expenditure reached the amount of Rupees 1,84,285-8-10; or the gross cost of this year shews an excess over that of last year of Rupees 16,172-8-6—a sum nearly the same as the reduction upon the Provincial Dispensaries (Rupees 15,224-5-11), and not much less than one-fourth of the whole expenditure upon the latter named Institutions.

30. The collection of private contributions was confined to one Dispensary (Vepery), and amounted to Rupees 108-12-0, the movement having been set on foot shortly before the close of the year; but it is stated that Rupees 60 is being raised monthly, the monthly expenditure of the Dispensary, after deducting the cost of Medical subordinates and European medicines, being Rupees 664-10-6, or rather more than eleven times the contributions.

31. For convenience of reference, the total expenditure on each of the Presidency Institutions is shewn in the margin. The Asylums, male and female, may be excluded from the account. The expenditure upon them is chargeable as much to the Provinces as to Madras, and the removal of the Asylums to the Neilgherries will remove the charge also. Moreover, the character of the Institutions is essentially different to that of Hospitals. The Lunatic

	RS.	A.	P.	RS.	A.	P.
General Hospital.....	82,756	2	4			
Native Infirmary....	16,072	2	8			
				98,828	5	0
Black Town...........	786	5	11			
Chintadrepettah......	1,611	7	0			
Triplicane............	5,265	13	1			
Vepery................	9,588	15	4			
				17,252	9	4
Eye Infirmary........	21,802	12	3			
Leper Hospital.......	9,218	4	4			
Lying-in-Hospital...	20,297	5	2			
				51,318	5	9
				1,67,399	4	1
Male Asylum.........	835	13	11			
Female do.	715	9	9			
Lunatic do.	20,350	12	11			
				21,902	4	7

Asylum is also not properly a Presidency Institution. Its location at Madras is accidental, and it receives patients from all parts of the country.

32. The removal of these charges diminishes the cost of Presidency Institutions proper, to Rupees 1,67,399-4-1, of which Rupees 98,828-5-9 is the cost of the General Hospital and Native Infirmary (classed with the General Hospital, as it is proposed to build a Native General Hospital of which this may be taken as the present representative); Rupees 17,252-9-4, of the Dispensaries proper (the Dispensaries attached to the Lying-in-Hospital and General Hospital have been in this statement incorporated with the Institutions themselves, although in the Report they are separated); and Rupees 51,318-5-3, of the Hospitals for special purposes—the Eye and Lying-in-Hospitals, and the Leper Hospital.

33. Four-sevenths of the charge for the Eye Infirmary consists of the salary of the Superintendent, who performs other important duties in the Medical College. The large expenditure of Rupees 4,122-0-4 on "other charges" needs explanation. It is greater by Rupees 1,300 than the same item in the General Hospital.

34. The expenditure on the Lying-in-Hospital, although there can be no question as to the advantages of such an Institution, is one of which only a small portion is absolutely a *necessary* charge. Of the whole number (1,426) of women delivered, the labor in 1,218 cases is stated to have been natural, or presented no difficult features. The Government abstain in this place from commenting on the expenditure of this useful Institution, and will reserve their observations for the report furnished by the Principal Inspector General and now under consideration, making the one remark that this is an Institution in which of all others diet fees may properly be charged to patients. The cause of entry to this Hospital is not unforeseen as in the case of ordinary sickness. The patient is, in all cases, a woman, and is seldom, except in the lowest classes, a bread-winner, and her husband must have supported her out of Hospital had she not been admitted.

35. The Leper Hospital is an Institution from the charge for which the Government cannot hope to relieve themselves. To secure its economical management is all they can expect.

36. The Dispensaries need not be reviewed one by one. When the proposed Native Hospital is complete, the Government will probably be able, in great measure, to relieve themselves from the charge for what will then become mainly local Charities. Their retention as Dispensaries for out-patients only, will probably be advisable; while the provision at them of proper means of transport for patients needing treatment as in-patients in one of the General Hospitals, will probably secure every needful purpose, while it will

also obviate the danger of the General Hospitals becoming confined in their operations to their own immediate neighbourhood as regards pauper patients. At Dispensaries for out-patients, the subordinate Medical Staff will only be small, and the expenditure for other purposes, exclusive of medicines, will be comparatively little; but whatever it may be, the Government will no longer be able to allow its incidence on Imperial revenues.

37. The Native Infirmary will, on the provision of the Native General Hospital, be abandoned; it is therefore unnecessary to refer to it here.

38. The matter referred to at the close of Dr. Cole's report, viz., the report of the Committee appointed by him to examine the expenditure of the General Hospital, and subsequently of the other Civil Hospitals at the Presidency, will be separately disposed of, and need not to be mentioned here.

39. The Government desire to call Dr. Cole's attention to the paging of the report and its appendices. In fact, the so-called appendices are a most material part of the report, and it is unnecessary that the report of 11 pages should alone be paged with Arabic numerals, while the appendices of 105 are paged with Roman numerals. The paging may with advantage be consecutive, and in Arabic numerals.

(True extract.)

A. J. ARBUTHNOT,

Chief Secretary.

The Pay of Civil Surgeons.

Those of our readers who are interested in the matter will be glad to hear that there is some prospect of a settlement of the claims of Medical Officers in Civil employ that they be placed upon a footing of equality with their, at present, more fortunate brethren in charge of Regiments.

A mixed Committee of Medical, Political, and Financial Officers is now sitting at Calcutta, to consider some of the questions left open by the last Medical Despacth of Sir C. Wood. Madras is represented by Mr. Cornish, whose official position necessarily has placed him in possession of all the facts which can furnish data for the conclusions at which the Committee are expected to arrive, as regards this Presidency.

We believe that the chief points to which the attention of the Committee has been directed, are—the adjustment of Civil Medical salaries, and how far and in what way the services of Uncovenanted Medical men may be availed of.

We trust that the recommendations of the Committee may be such as in every way will satisfy and gratify the Civil Surgeons; and that they will be cheerfully acceded to, and immediately acted upon "with retrospective effect."

The Madras Medical College.

The following changes have taken place in the staff of the Madras Medical College:

Dr. G. Bidie has accepted the Professorship of *Botany and Materia Medica,* vice Dr. Montgomery, resigned and on sick leave to Europe.

Dr. W. H. Harris has been appointed Professor of *Midwifery and the Diseases of Women,* vice Dr. Aitken, vacated, as ill-health compelled him to proceed to Europe a second time within three years.

Mr. Chipperfield is acting Professor of *Medicine and Clinical Medicine,* vice Mr. Blacklock, on sick leave.

Mr. Furnell is acting Professor of *Anatomy and Physiology,* vice Mr. Chipperfield, on other duty.

The Army and Navy Medical Department.

(From the Overland Mail, December 11*th,* 1865.*)*

"The Committee appointed to inquire into the causes which have, for the last few years, materially tended to prevent a high class of professional men from entering the Medical service of the Army and Navy, and to make a report which may, it is hoped, remove all existing difficulties, consists of the following:—Vice-Admiral Sir Alexander Milne, Major-General Lord F. Paulet, K.C.B., Sir James Gibson, K.C.B., Director General of the Army Medical Department, Dr. Bryson, C.B., Director General of the Navy Medical Department, Captain Galton, Mr. Busk, and Dr. Markham. Mr. Robert Bell, of the Admiralty, is acting as Secretary to the Committee."

We extract the following from the "Medical Times and Gazette" of 9th December 1865 :—

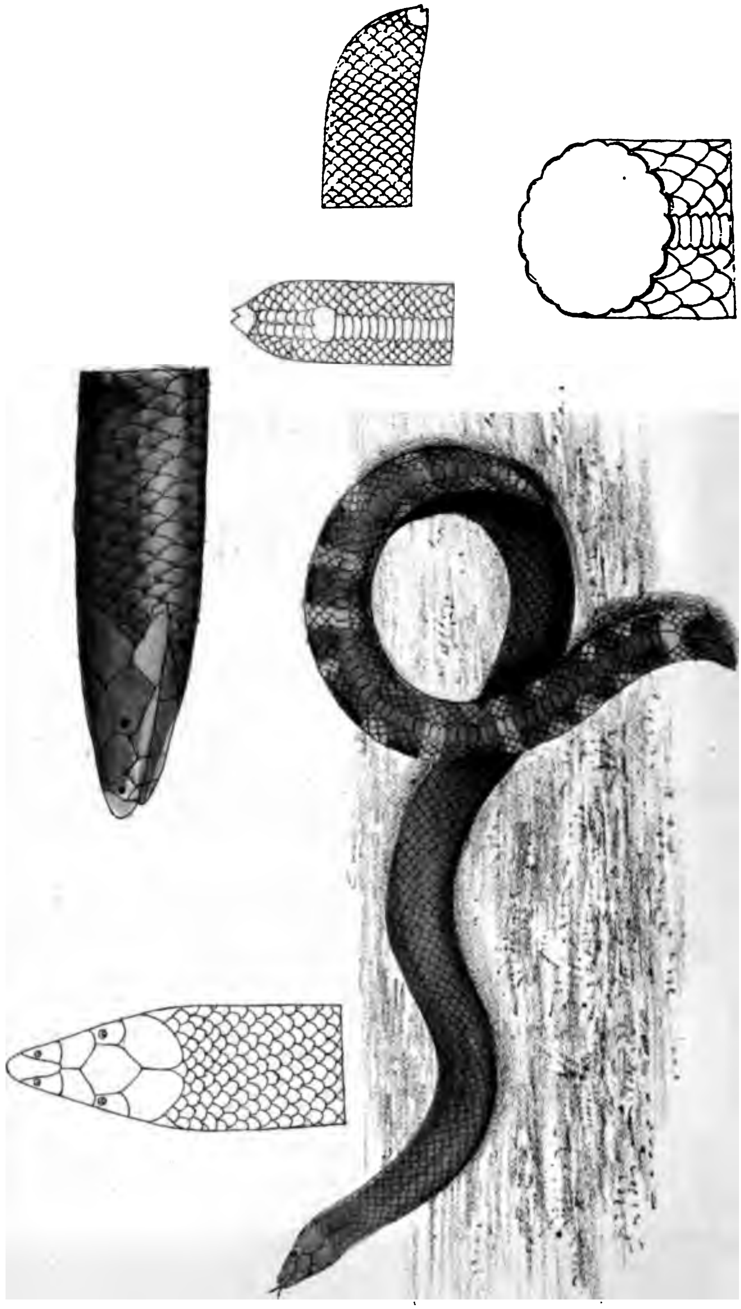
"We recently informed our readers that a Commission was sitting at the Admiralty to investigate into the causes of the grievous unpopularity of the Army and Naval Medical Services ; we gave them its constitution, and the names of the President and Members, and we stated that the examination of witnesses had commenced. We now learn that the Commission has examined all the witnesses it deemed requisite, and we may, therefore, soon expect to hear the results of the deliberation. As far as the Civil Medical members are concerned, there can be no doubt as to their anxiety to do justice to our Profession and to those members of it in the public services. Mr. Busk is an eminently conscientious and able man, fully acquainted with the requirements of the services, sensible of the great changes which have taken place in the education and social position of the men who now study Medicine, and, above all, fully alive to the lamentably inferior quality of the candidates who are seeking to serve Her Majesty. Dr. Markham, at the cost of much time and labour, had thoroughly sifted the question and must have satisfied himself that the grievances which have been so long and so loudly proclaimed have a firm foundation. We have no doubt, therefore, that they have earnestly striven to perform their duty, and they deserve the hearty thanks of the Profession and of every soldier and sailor for their efforts. A private Commission is, no doubt, much less satisfactory than a public one ; however, a great many eyes have been turned to that Committee-room in the Admiralty. Many have been the exclamations that the whole thing was a sham,—an attempt on the part of the Government to hoodwink the public by an appearance of something being done, and to delude the Profession into entering the public Service by false hopes. We have heard much dissatisfaction expressed at the class of witnesses brought forward. Honorary Physicians to the Queen, senior Inspectors-General, and a Surgeon notoriously favourable to the Horse Guards, could hardly afford the Commission an adequate and fair view of the existing discontent of other ranks. Had these been all the witnesses, the Commission might have ceased from its labours, but the civil element did not probably allow these to be all. As a class, the Army and Naval Assistant-Surgeons are more affected than any other rank, yet from what we can learn, they appear to have had no voice in the matter, for none were summoned as witnesses. It surely would have been well to have asked some of the men that have resigned the services, their reasons for doing so, and to have inquired of the many who are only retained by the appointment of this Commission, what their grievances were. It ought to be remembered that the Army inspectorial ranks personally know nothing of the complaints made by Regimental Surgeons, because these complaints have only arisen of late years, and were due to the working of the Medical Warrant.

We have even heard old regimental Surgeons say that they were infinitely happier in their regiments under the old *régime* than now. For the state of things in the navy, we would refer to a letter published in the last number of the *United Service Gazette* by a late Assistant-Surgeon, which letter, by the way, we commend to the perusal of the Commission. It is not the calumnious emanation of some coward, sheltering himself under an anonymous appellation; but it is the outspoken avowal of a man who gives his name as the guarantee of his sincerity and truthfulness. Can it be wondered that the navy urgently wants fifty or sixty men, and only gets three or four; or that professional *gentlemen* refuse to remain in it? The army Medical service, bad as it is, is certainly better than this. Thirty or forty years' service as an Assistant Surgeon, on a maximum pay of 13*s.*, is, at any rate, preferable to the loss of self-respect entailed by service in some of the ships of our navy. Still, the Army Medical Department has nearly exhausted the number of those who care for the sweets she offers, and her last batch of Medical aspirants exceeded all the others in the extent of their—ignorance!

We believe, then, that something must be done at once. The two services together require, *at the very least*, upwards of 100 men, and the Government may be sure they will not be forthcoming unless some changes are made; at least, if they be, the number of our profession will have to accept the lot they deserve, and can expect no sympathy.

We never want to see Medical men transformed into mere officers; we have no sympathy whatever with the man who thinks he can enhance his importance by an overweening love and display of military rank or dress. We heartily dislike—and all the really good men of both services do the same—that very small, but very noisy, class of men who enlarge the "officer" to such a degree as to overshadow and conceal the "Medical" prefix: men whom Thackeray rightly fixed on as a type of the military snob. Doctors are not wanted in order that they may look "nice" in their uniform or make a "smart" appearance at parades, but they are required to treat and cure the sick soldier at the Hospital, and the more they are encouraged to consider the latter as the sphere of their duties and the less their presence is required at the former the better. What we want to see is *well-educated gentlemen in our services.* These cost more, but they are well worth the outlay. Ability, industry, and professional zeal *do* consort more than is generally believed with dignity, urbanity of disposition, and a contempt for mean and false semblances of military rank. Ambitious men of great talent will, nineteen times out of twenty, seek to remain in metropolitan or large towns to practise their profession, and acquire fame and wealth in connexion with large Hospitals and Medical schools. But be the talent and ambition ever so great, it generally requires great patience, enduring courage, and some means to

command success, and some gladly shun the trial. T
enter the public services, and they will be very few, becau
in intellect, like giants in stature, are very rare and costly,
are quite aware of the fact. But there are very many capit
men above the average, men who would not rest in a co
county town without getting on the staff of the Hospital,
would in time command means and position. Now,
number of these would, under happier auspices, turn their
to the Army and Navy. Should the services be so fortun
procure this class of men, sure we are that they will pro
acquisition, valued as much by the admiral as the common
by the general as the private soldier."



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PART I.

ORIGINAL ESSAYS.

ART. IV.—*Notes upon the Snakes of the Madras Presidency.*

By Captain R. H. BEDDOME, Officiating Conservator of Forests.

(*In continuation of Art. IV. Vol. VI.*)

Description and Plate of a New Species of Snake of the family Uropeltidæ from the Pulney Mountains.

UROPELTIDÆ.

GENUS. PLECTRURUS.

PLECTRURUS Pulneyensis.—(R. H. B.)

Rostral rather obtuse, produced back between the nasals and touching the frontals, nasals, not meeting. *Eye small,* in front of the ocular shield. *No supra-orbitals.* Vertical 6-sided, occipitals rounded behind, 4 upper labials. Scales round the neck 19, round the body 17; subcaudals, male about 12, female 6—8. Tail compressed, ending in a small spinose keel, more or less bicuspid. Scales of the tail all smooth. Color uniform earthy brown, a lateral bright yellow streak from the labials continued down each side of the trunk about an inch or an inch and a half, a few minute yellow specks on the back, belly with broad, bright, yellow transverse bands, very regular as to number and shape, some yellow markings about the vent and tail. (The brilliant yellow fades in spirit.)

Very abundant on the Pulneys at an elevation of 7,000 to 8,000 feet, where it is dug up from under the turf, and often appears on the surface of the ground during the rains.

This species and the Plectrurus Wynadensis, described by me in a former paper in this journal, differ from the typical form of "Plectrurus" in their much smaller eye and in the absence of supra-orbital shields, in fact they come very close to the genus Rhinophis, from which their compressed tail sufficiently separate them. They will, perhaps, have to be placed in a genus between "Rhinophis" and "Plectrurus."

ART. V.—*On Some of the Dangers of Phymosis.* By HENRY C. BRODRICK, M.D., Assistant Surgeon, 1st Central India Horse.

WITHIN the past twelve months, I have had to treat several cases of Phymosis, in two of which the consequences of the closure of the preputial orifice proved serious, leading in one to rupture of the urethra and extravasation of urine with extensive sphacelation of the parts, and in another to the formation and lodgment of no less than forty calculi, weighing altogether 68 grains, in the sac between the prepuce and the glans penis.

It seems to me that Hindoos are very liable to diseases and accidents occurring to the prepuce, and that this is attributable to their neglect of cleanliness. It is probable, too, that the follicular secretion of the part is more active in Easterns, than in other races, and that the wholesome practice of circumcision amongst Jews and Mahomedans was dictated in a measure by the knowledge of this fact, and a recognition of its importance.

During ten years' experience of practice amongst natives of

India, I have repeatedly been called upon to slit up the prepuce, in consequence of some diseased condition the integument concealed and fostered, and in the General Hospital at Indore my native doctors often, on their own responsibility, followed my example in suitable cases.

It is bad surgery to slit up the foreskins of patients indiscriminately, because there is a sore beneath, which the Surgeon is unable to get a look at: in by far the majority of cases, cleanliness, the use of weak astringent injections, and the application of cold will reduce œdema and inflammation sufficiently to admit of an inspection of the sore, previously hid from view, and which will often be found cicatrizing in consequence of the same treatment.

In one case only did I consider it necessary to remove a ring of the prepuce. It was the case of a young boy, the son of a Cashmerian Pundit, who had almost complete atresia of the orifice, and a very elongated foreskin.

In this case, inflammation had sealed up the orifice, with the exception of a very minute aperture, which was liable to be obstructed by a plug of secretion.

When the bladder contracted, the first gush of urine would distend the preputial sac almost to bursting, and then, if the *vis a tergo* proved insufficient to dislodge the plug of secretion, the boy was obliged to force the passage with a bit of stick or straw.

He soon recovered from the slight operation rendered necessary, namely, amputation of a ring of the redundant integument, and, tearing up to the corona, of the mucous membrane, after the manner of the Jewish operators.

Chelius writes—" If the prepuce have not an opening, it becomes distended by the collecting urine to an oval transparent swelling, and the retention of urine may be fatal if assistance be not afforded in proper time."* Neither Chelius nor his admirable translator and annotator give instances of fatal consequences of this atresia, but it is most likely that Chelius had the danger of extravasation in view when he penned the above passage.

I proceed to notice a case of this alarming accident that occurred during the present year in my practice.

Kusroo, a Kumhar (tiler) by caste, aged 25, is brought to the Cavalry Hospital, Augur, on April 8th, suffering from retention of urine which has existed for 30 hours.

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* South's Chelius, Vol. ii. p. p. 343.

I found him in the following condition:—There was enormous œdema and a sphacelated appearance of the prepuce, the orifice of which was closed by a crust of purulent secretion. The scrotum was greatly distended by an extravasation of urine, which extended backwards over the perinæum, forwards over the entire scrotum and penis, and laterally to either groin.

There was a large hard swelling in the hypogastric region, extending from the pubes to the umbilicus, tender to the touch and dull on percussion. The man was in great agony and in an almost typhoid condition.

His story was, that he had had a purulent discharge from the urethra for the last three years, he had not had stricture, but the present retention had come on suddenly, thirty hours before his admission. This was all the account he could give of himself.

I first passed a director through the occluded preputial orifice up to the glans, and on this divided freely the enormously distended integument. The glans appeared quite healthy. Urine began at once to distil from the wound.

A large catheter was now passed with ease, but not one drop of urine flowed, it was withdrawn and twice again re-passed, but the same negative result followed.

Whilst the instrument was *in situ*, I made out, from an examination by the rectum, that the instrument had glided from the mesial line into the ischio-rectal fossa; possibly it had followed the line of rupture and extravasation.

An elastic catheter was now passed with great care, and on removal of the stilette I had the great satisfaction of seeing the urine begin to flow from the orifice of the instrument. It flowed very slowly at first, for the bladder was half paralysed, but the position of the patient being altered the stream improved. The urine was not mixed with blood, and from this I concluded that the urethra, and not the bladder, had given way.

At the end of micturition a few drachms of thick white pus, or mucus mixed with urine, flowed out.

The catheter was then tied in the bladder, and four deep incisions were made into the scrotum, and two in the perinæum, from all of which urine commenced to distil.

A large poultice was applied over all, and a draught containing a drachm of Tinct. Opii and a drachm of Aromatic Spirits of Ammonia given.

Two days after it was found necessary to cut into a swelling that had formed over the pubes, and to give the patient a purgative. In all other respects the patient was doing very well.

An opiate was given each night, and rum and milk freely administered throughout the progress of the case; the local treatment consisted of the constant irrigation of the parts with a diluted solution of Condy's fluid.

The anterior part of the scrotum entirely sloughed away, and a great portion of the posterior too, the testicles being entirely exposed with their spermatic cords. The greater part of the integument of the penis too came away, but the glans and the substance of the organ were preserved.

The catheter was frequently washed out with warm water from a syringe, which always relieved any tenderness there might be over the region of the bladder.

The vast wound was dressed with tow kept wet by the constant flow of Condy's fluid from a syphon, and this dressing was removed every morning by means of a stream of warm water playing on the part from a syringe. The patient was kept scrupulously clean, and was liberally fed, and he never had a bad symptom.

Eight days after admission all the sphacelated parts had come away, and a florid granulating wound of huge extent remained.

The catheter was kept *in situ* for 10½ days, and was found to be encrusted with phosphatic deposit on withdrawing it.

I now discovered that an ulcer had eaten through the corpus spongiosum at about 2¾ inches from the meatus urinarius: a probe passed in at this ulcer passed out at the meatus.

The smarting of the urine, as it flowed from this hypospadias over the granulating wound, caused him much suffering, but presently the orifice closed and he ceased to complain.

Was this ulcer the site of the original rent in the urethra through which the urine was extravasated?

By June 19th, seventy-two days after his admission, the man was discharged cured to all intents and purposes. The shabby remnants of his scrotum healed soundly over the testes, and the unprotected corpora cavernosa found a covering for themselves. The man was discharged fat and sleek, and perfectly satisfied with the results.

I again quote from Chelius: —"When the orifice of the prepuce is smaller than that of the urethra, the urine cannot flow in its usual stream, part of it collects under the prepuce, distends it, and can only completely be voided by pressure. By the urine thus retained, and becoming putrid, the prepuce is inflamed, often lengthens and becomes hard; and even *stony concretions* may be formed between the glans and the prepuce."

I proceed to describe such a case, in which such "*stony concretions*" were formed, and which came under my notice during last April.

Koosheal, an Aheer by caste, aged 35 years, applied for relief at the Cavalry Hospital, Augur, on April 17th, complaining of stoppage of urine.

On examination it is seen that there is a phymosis and considerable swelling at the end of the penis.

At the site of the preputial orifice a pink coloured cicatrix is observed, in which is a very minute aperture. This pink cicatrix was left after an operation performed on the man by some Hakeem, five years before, for the relief of phymosis.

Through the minute orifice in this scar a probe was passed, which displaced a plug of secretion.

He said that he was scarcely ever able to void his urine now, without previously poking a bit of stick into the orifice, to remove the plug that formed in that narrow outlet.

The probe pushed through the orifice strikes upon something that feels like gravel, and on feeling at these gravel-like bodies through the prepuce, they can be moved on and over each other, and convey to the finger the idea of shells or pebbles.

The man informed me that he had noticed this "*kunkur*" years before, and that the pieces had grown larger and more numerous by degrees.

The minute orifice was pricked with a bistoury, and a director passed, on which the prepuce was freely divided.

Then with a syringe, a scoop, and the fingers, I turned out forty calculi of various sizes, bearing on their surfaces the facets that marked the closeness of their impaction.

The whole weighed 68 grains, the smaller ones were like the seeds of a fruit, or, rather, they resembled the representations of red blood corpuscles, being flattened discs.

There were two calculi much larger than the rest, rather rough as to their surfaces; the larger of these two weighed 26 grains, and the smaller of the two 14 grains, the run of the rest averaged $\frac{3}{4}$ grain each in weight.

The foreskin was found to be much thickened by the growth, apparently, of muscular fibres. It was lined with a very tough mucous membrane, which presented no sacculi, but was whitish and aphthous in places from contact with the calculi.

Four stitches were passed through the divided integument, and cold water dressing applied.

On attempting to pass a full-sized catheter, to see if there were any calculi in the bladder, I encountered a spasmodic stricture at about the membranous urethra, and thereupon I desisted from the attempt until a better opportunity. In the meantime, the wound healed and the man disappeared.

I sent one of these calculi for analysis to S. J. Wyndowe, Esq., Professor of Chemistry, Medical College, Madras, who was kind enough to examine it, and found it consisting mainly of phosphate of lime and a little animal matter.

The calculi, then, were formed *in* the situation when I found them, and were the products of decomposition of the urine, phosphates, and the epithelium and other secretions of the part.

Mr. South, in a note in the work quoted above, (vol. ii. p. 633,) writes:—"In the College (of Surgeons) collection there is a curious case of VINCENT'S:—"Numerous small *calculi*, which, with above two hundred others, were removed from between the prepuce and *glans penis* of a very old man. The patient had congenital *phymosis*, the orifice of the *urethra* scarcely admitting the introduction of a common probe. From the presence of the *calculi* the prepuce was distended to the size of a large pullet's egg, and retention of urine was finally produced. On dividing the prepuce, one of the calculi was found completely blocking up the orifice of the *urethra*. The *glans penis* was in a state of ulceration, and a large portion of its substance had been absorbed. The patient had, during many years, occasionally experienced great pain and difficulty in making water, and latterly he had a constant *stillicidium*. The calculi are composed principally of the fusible compound (phosphate of lime and phosphate of ammonia and magnesia;) most of them have a small nucleus of uric acid; their external surface is varnished over with urate of ammonia. From the composition of the *nucleus*, there can be no doubt but that the greater number of these *calculi* had passed from the *urethra* into the sac of the prepuce; and their irregular form and close adaptation to each other, proves that in this situation they had increased considerably in size by the deposition of the earthy phosphates."

In my case, no such nucleus seems to have existed.

During July last, a Rajpoot cultivator, aged 26 years, applied for the relief of a phymosis, which had caused retention of urine, at my hospital at Augur. The urine had been stopped for the last 24 hours, and the man was suffering acutely from pain in the supra pubic region.

A director was forced through the constricted aperture, displacing the usual plug of secretion, and the prepuce divided when a few drachms of pus flowed out and presently the man made water in a full stream.

Four stitches were introduced and cold dressing applied, and in a few days the man went home quite recovered.

Only about a fortnight ago another case of phymosis applied to me for relief, I proceed to notice it briefly. Golab Singh, Rajpoot, aged 22, suffers from retention of urine. He had voided no urine for 14 hours. The prepuce was found to be much thickened but not much indurated; the orifice was closed by a scab and not a drop of urine could escape. He denies any syphilitic history, but confesses to gonorrhœa, in fact, he has got gonorrhœa at the present time.

For the past two years he had noticed a gradually contracting atresia of the preputial outlet, the origin of which he attributed to the inflammation and swelling that followed a bite of the part by an *ant.*

When making water the urine would distend the prepuce greatly, and, presently driving out the scab or plug of secretion, would be voided.

On slitting up the prepuce, about two drachms of imprisoned pus escaped, and presently the urine was voided in a full stream: there was no stricture of the urethra.

From these cases we see what inconvenience and even danger may attend atresia of the prepuce, and that a gradually increasing atresia may become a total sealing up of this outlet by an attack of acute gonorrhœa, and may even lead to such a terrible accident as extravasation of urine with its manifold dangers.

One cannot but feel surprised at the urethra giving way before the atresia; old structure yielding whilst new material opposes successful resistance; but it is well to bear in mind that in the above case of extravasation from phymosis the urethral lining membrane was, at the time of accident, as it had been for three years, in a state of inflammation.

ART. VII.—*Note on the Magnetic Oxide of Iron as a Means of Purifying Water.* By J. MAYER, ESQ., Deputy Inspector General of Hospitals, Presidency.

As this substance has lately been brought prominently before the public, and has been much lauded on account of its special action in purifying waters, and as, moreover, a Committee of the National Exhibition have lent the sanction of their names to it as a voucher for the above-mentioned special quality, it appears almost necessary, in a paper of this kind, to offer a few words respecting it, particularly in reference to the two questions of natural and artificial supply.

Magnetic oxide of iron, it is well known, is a natural product found largely in certain localities; but it is very questionable whether it can everywhere be so readily obtained, and in such quantity as to make its use practicable on a large scale. All the reliable information on this head that has been procurable will be given at the latter part of this note, and if it should turn out that this product can only be had here and there and in places at considerable distances from those situations whereat filter beds are to be made, then the only resource will be the artificial product; and, in order to afford a clear view of the practicability of resorting to it, the shortest way will be to give, first, an account of the composition of the oxides, and, secondly, the mode of preparation, so as to enable any one to manufacture the compounds under consideration.

Every equivalent or 139 grains of the crystalized green sulphate of iron contains 36 grains of the protoxide of iron, therefore 1 lb. avoirdupois or 7,000 grains will contain X = 1,813 grains, or 4 oz. 65 grains of the protoxide, and any other quantity in proportion; but it is not the protoxide of iron that is wanted, it is the magnetic oxides, of which there are two. Now, to understand how these oxides are formed, as well as the reasons for the processes here given, it will be advantageous to set down in order the various oxides of iron with their appellations and formula, it being premised that Fe stands for Ferrum, Iron, and O for Oxygen. Protoxide $\mathrm{Fe\ O}$; Sesqui Oxide $\mathrm{Fe_2\ O_3}$; these formulæ convey, in short the important information that the protoxide of iron is composed of one combining quantity of iron and one combining quantity of oxygen, and that the sesquioxide is composed of 2 combining quantities of iron and 3 combining quantities of oxygen; this being understood, the composition of the magnetic oxides will be at once evident, their respective formulæ being $\mathrm{Fe_3\ O_4}$ and $\mathrm{Fe_4\ O_5}$ since it is patent to every one that one atom of the protoxide and one of sesquioxide $\left\{\begin{matrix}\mathrm{Fe\ \ O}\\ \mathrm{Fe_2\ O_3}\end{matrix}\right\}$ when united, equal $\mathrm{Fe_3\ O_4}$ *i. e.*, the 1st magnetic oxide, and in like manner it is equally plain, that two atoms of protoxide 2 ($\mathrm{Fe\ O}$) and 1 atom of sesquioxide $\mathrm{Fe_2\ O_3}$ when united, equal $\mathrm{Fe_4\ O_5}$, the 2nd magnetic oxide.

The above compositions having been clearly demonstrated by repeated and careful analyses, they suggested the artificial process, of which the dominant conditions are that the protoxide and peroxide should be brought together in the particular proportions shewn, and in a recent state. How this is effected will be seen in the text of the paper.

PROCESS.

To obtain artificially magnetic oxide of Iron having the formula $\mathrm{Fe_3\ O_4}$, such quantity of the green proto-sulphate of Iron, as will afford the required quantity of oxide being taken, the crystals are to be dissolved in pure water; two thirds of the solution thus formed are to be poured into a second vessel; to this portion, which is to be boiled, nitric acid must be added till brown vapours are no longer given off.

The iron contained in this portion is now in the form of sesquioxide, while in the one-third which has not been boiled it remains in the form of protoxide. The two solutions are now to be mixed together; the mixed solutions are then precipitated by the volatile alkali or carbonate of soda, and are boiled; during the boiling the mixed oxides unite and form the black magnetic oxide $Fe_3 O_4$. To form the magnetic oxide $Fe_4 O_5$, the processes are precisely similar in all details, except that only *half* the quantity, instead of *two-thirds*, as in the first case, is peroxidized by boiling with nitric acid.

After the details above given, it does not seem necessary to enter further into the question of whether the artificial magnetic oxides can be obtained so readily and economically as to render their use practicable on the large scale; as any process involving accurate weighing, solution, accurate division by graduated measures, boiling and precipitation, besides some expenditure for re-agents, would be inapplicable. The process has, however, been made available for the manufacture of a sufficient portion of artificial magnetic oxide, to test its efficacy as a filtering and purifying agent. The same water in the same quantity was used in each of the experiments recorded in the Table of Results marked Y.

TABLE Y.

The water selected for the following trials was notoriously bad; it was taken from a well in the compound of the Madras Medical College. The quantity experimented on was the 16th of an Imperial gallon.

Previous to any filtrations, one-sixteenth of a gallon was evaporated to dryness, first on a porcelain dish, and finally in a platinum capsule of known weight; it left a total amount of residue = grains 15·08, and after ignition (with the usual precautions) grains 12·52, which was taken as the inorganic impurity present, and the loss (grains 2·56,) as the organic. Nine separate sixteenths of a gallon of the same water were then carefully filtered through the materials noted below; the filtrates were then separately evaporated, and the residues left weighed and set down opposite the filtering material used; these various residues were then ignited, the respective residues again weighed and set down in order, the loss in each case being the organic matter. The figures thus obtained, by being respectively deducted from the amounts originally present, shewed, by the difference, how much had been separated by each filter material.

A.	B.	C.	D.	E.	F.
Material used for filtration.	Total left after evaporation of filtrate.	Residue after ignition of B.	Difference between C and B, being organic matter present.	Organic matters amount separated by each filter.	Percentage amount separated.
		Grains.	Grains.		
1. Ordinary filter paper.. ..	= 14·69	12·36	2·33	·23	8 98
2. Swedish filter paper.......	= 13·24	12·24	1·63	·93	36·36
3. Clean white sand........	= 15·14	13·09	2·05	·51	19·92
4. Sand and charcoal......	= 14·93	12·94	1·99	·52	22·35
5. Natural magnetic oxide of iron..	= 14·18	12·49	1·69	·87	34·00 nearly
6. Artificial magnetic oxide of iron....	= 14·14	12·50	1·64	·97	36·00 nearly
7. Finely divided Mica or talc....................	= 14·22	12·39	1·83	·73	28·51
8. Swedish paper, natural magnetic oxide of iron..	= 13·99	12·37	1·62	·94	36·71
9. Swedish paper, natural magnetic oxide of iron..	= 13·94	12·33	1·61	·95	37·10

A few remarks on the table just given seem to be called for, in order to point attention, in the first instance, to the differences in the materials employed.

Nos. 1, 2, 3 and 7 are materials to which no other than mechanical action has ever been attributed; by this agency, they separated from one-sixteenth of a gallon of the same water respectively :—

	Grains.
1. Ordinary paper	·23
3. Clean white sand	·51
7. Finely divided mica	·73
2. Swedish filter paper...	·93

These figures, if the original amount of organic matter present in one-sixteenth of a gallon be taken as 100·, give the percentage proportions shewn in column F; thus it appears that of these four mechanical agencies, No. 2 is, by far, the best; No. 7 the next best; and so on, and that out of 100 parts the best mechanical means tried was only able to separate 36·36 parts. Nos. 5 and 6 are materials to which special purifying powers have been attributed. The percentage quantities separable by their means are shewn, in the same column of the table, to be 34·00 nearly and 36·00 nearly, *i. e.*, these special agencies are neither of them quite so powerful as that exercised by the best mechanical means.

Finally, the results of filtration, by mixed agency, as shewn by Nos. 4, 8, 9, shew not only great diversity of results, but that those obtained by means of sand and charcoal (No. 4) require, in order to make such materials effective, certain other precautions which could not be adopted in this or that case without vitiating the first principle of comparative investigation, that, viz., of placing all the substances experimented on under "precisely similar conditions," and it will be observed that in none of these experiments has this canon been departed from. The simplest means, the same sized funnels, and the like quantities of materials were in each instance employed. In no instance have special arrangements, packing, or adjusted pressure been resorted to; but without these means the filtration by double agencies as shewn by Nos. 8 and 9, appears to exceed, in a slight degree the purification that is obtainable by single mechanical agencies. Whether the magnetic oxide of iron acts by its insolubility and sp. gr. in such a manner as to form very minute pores through its mass, or by any special mode of action, has not been investigated by us. The artificial product is a finer powder than the natural magnetic oxide and it acts both singly and in conjunction with Swedish filter paper better than the natural products, which considerations tend to support the idea that, after all, it acts mechanically, and not from its possessing any peculiar purifying power. From a partial examination of Spencer's filtering apparatus, it was evident—1st, that a sponge under a graduated pressure was employed as a preliminary mechanical means of intercepting impurity; 2ndly, that pieces of sponge cut very small were interspersed through the material in the body of the filter. What further special arrangements may have been employed we are unable to say, as it was not thought worth while to destroy the apparatus for the sake of such information; it was sufficiently evident that all the precautions before adverted to and generally deemed necessary in the manufacture of filters had been carefully attended to. With all these advantages, however, the results obtained by its use were above those obtained by the use of Swedish filter paper alone only in the proportion shewn by the figures below:

Swedish filter paper.......	1·63
Spencer's filter...............	1·60

A further experiment was made to ascertain if double filtration through Spencer's filter and Swedish filter paper would make any difference in the results. It was found to do so, reducing the quantity of organic matter left present in the filtrate to 1·57, and the amount separated would thus equal ·99, which represented, as a percentage = 39·00 nearly. From this experiment, viewed in connection with what has been previously advanced, we are strongly inclined to look upon filtration generally, (excepting that through various kinds of charcoal, vide note) as essentially a mechanical act; and that the finer the pores of the filter, the more insoluble the filtering material, the greater its specific gravity and the less its liability to be disturbed, the more perfect will be its action. We doubt the utility of any material like sponge either on the small or on the large scale, as, however perfect it may render an apparatus for a while, it is well known that very frequent renewal and careful washing, as well as exposure to the air (ozonization) to get rid of fetid odours is necessary to keep these machines in good order; but, notwithstanding all the objections that we have here urged to particular views relative to modes of action or to forms of apparatus, we think, with reference to the manufacture of filter beds for towns, &c., that table Y shews undeniably that the natural magnetic oxide of iron holds a high place as a filtering agent: by its means, nearly 34 per cent. of organic matter was separated; it is superior to finely divided mica, and only inferior to the artificial magnetic oxide and to Swedish filter paper, both which are inapplicable for all but table or laboratory experiments.

Even with reference to charcoal and its well known power of condensing gases in its pores, it is scarcely necessary to observe that its series of special actions (which generally commence with the condensation of the atmospheric air) are only to be kept up by a renewal of the primary conditions; and that if these be not renewed, its special actions merge into those of a mechanical agent.

Dr. Parkes, in his late work published for the benefit of the Medical Officers at Netley, gives the statement shown in the margin; it will be observed that we have not been able to confirm this statement. The utmost amount of organic matter that we have been able to separate by filtration is less than 40 per cent. and differs widely from 88 per cent. as stated in the work above mentioned.

"Of all these substances, charcoal is the best; it can remove 88 per cent. of organic matters, and 28 per cent. of mineral matter. It has removed 7·48 per cent. of the Chloride Sodium, 8·5 per cent. of the lime salts, and 2·3 per cent. of the Sulphuric Acid (Witt.)"

With reference to the ready procurability of the natural magnetic oxide in various parts of India, we beg to submit such information as we have been able to obtain.

Enquiries at the Government Central Museum have shewn that magnetic iron ore is to be found at many places in the Vellore Talook, &c., vide page 25 of the Catalogue of Articles contributed by Madras to the International Exhibition of Works of Industry and Art held in London, 1862.

By reference to the catalogue of the iron ores of Southern India, it will be found that the following are named as localities from which magnetic iron ores can be obtained :— in numerous villages in the Northern Division of Arcot; in some places in the Bellary District; in many places in the Canara District; in several localities in the Chingleput District; in several places in the Cuddapah District; in some places in Guntoor and Kurnool; from one place in Madura; from 12 different places in Malabar; some places in Masulipatam; from many places in Mysore, Nagpore, Neilgherries, Rajahmundry, Salem, Tinnevelly; but whether it can be had in quantity in all these places is not stated.

In reply to some enquiries casually put to him, Dr. Aitken states that he has seen immense quantities of magnetic oxide at Coimbatore.

Finally, in the Memoirs of the Geological Survey of India, volume iv. part 2, valuable information is to be found in reference to localities in which magnetic oxide of iron is to be met with, and in the appendix to this volume the magnetic iron beds of Kunjamully near Salem are admirably described; they are said to be very extensive, and the supply of ore inexhaustible.

Unfortunately for the purpose considered by the authors of the work quoted, *i.e.*, the manufacture of *iron*, the absence of appropriate fuel in quantity interferes so greatly as almost to interdict it, or if not to reduce any profit obtainable thereby to a minimum. In like manner, the cost of transport from one place to another will, it is apprehended, interdict the use of the magnetic oxide as a material for filter beds, except such places as those in which the oxide in question is found;

3½ Rupees per ton is the price paid by our Porto Novo Company for the carriage of the ore a distance of 20 or 25 miles.

ART. VIII.—*A General and Medical Topographical Report of the Madras District.* By J. SHORTT, M.D., General Superintendent of Vaccination, and late Zillah Surgeon, Chingleput.

THE old Chingleput District forms that portion of the late East India Company's possessions in the Carnatic termed the Jaghire, and formed the first territorial possession of large extent acquired by the Company in 1750—63 from the Nabob of Arcot, for services rendered to him and his father by the Company, and renewed on leases till 1780, when the Madras Presidency assumed the direct management. The District comprises an area of 3,130 square miles extending northward to the Pulicat lake, southward to Allumparva, and westward to Conjeveram. It is bounded on the east by the Bay of Bengal, the Coromandel or Eastern Coast extending about 120 miles: on the west by the Districts of North and South Arcot; on the north, by North Arcot and Nellore; and on the south by South Arcot.

It was formerly divided into ten taluqs, but in the year 1859, it was amalgamated with Madras and formed into seven, six of which form districts, each presided over by a Tahsildar, subject to the Collector and his Assistants; the Treasury being in charge of the Deputy Collector. Madras forms the seventh, or a taluq of itself, and is presided over by the Collector and his two Deputies, one of whom is in charge of the Salt Depôt, and the other the Abkaree, Quit-rent, and Registration departments. Madras, which has a history of its own, is the Capital of the Presidency, and one of the largest cities in Southern India. An area encircling 26½ square miles is under the control of the High Court; with this exception all other parts of this district come under the judicial cognizance of the Civil Judge of Chingleput.

Simultaneously with the amalgamation and reduction in the number of the taluqs, the designation of the District was changed from *Chingleput* to that of *Madras.*

The following table furnishes some particulars regarding the Districts :—

Table giving the names of Taluqs and Kusbah stations, distances between the Taluqs and Madras and Chingleput, with area, number of villages, population, &c., of the Madras District.

	Taluq.	Taluq Kusbah.	Deputy Tahsildar's Kusbah.	Distance from Madras.	Distance from Chingleput.	Area in square miles.	Number of villages.	Population.	REMARKS.
	1. Madras......	Capital of Southern India.			35	..	...	4,27,771	Europeans and East Indians. 16,368 NativeChristians 21,839 Hindoos .... 3,25,678 Mahomedans... 63,886
				Miles.	Miles.				
Collector's Principal Division.	2. Sydapet...	Kusbah..	Poonamallee	Sydapet... 6	Sydapet 30	355	350	1,00,457	
	3. Trivellore.	Do.	Mylapore....	Trivellore 30	Trivellore ... 40	585	342	1,06,690	
	4. Ponnary...	Do.	...	Ponnary. 25	Ponnary 60	540	298	72,247	
Sub-Collector's Sub-Division.	5. Madranticum.........	Do.	Ootramulloor..	Madranticum..... 50	Madranticum. 15	650	563	1,35,551	A large village, situated on the Southern Trunk Road.
	6. Conjeveram.........	Do.	Streepermadoor.	Conjeveram..... 48	Conjeveram ... 22	500	464	1,30,860	A large town.
	7. Chingleput	Do.	Triparoor. ..	Chingleput 35	...	470	444	88,096	

NOTE.—*Kusbah* means the head quarters of the Tahsildar, where he usually resides and has his treasury.

A short account of each taluq may not be out of place here.

2. *Sydapet.*—The village of Sydapet is situated on the northern bank of the river of that name. It lies between Saint Thomas' Mount and Madras, being two miles distant from the former and six miles from the latter. The Collector holds his office here, and a Deputy has charge of the treasury.

The Military Cantonments of Palaveram, Saint Thomas' Mount, and Poonamallee, are within the area of the taluq, Madras being on its northern side. Saint Thomas' Mount is eight miles from Madras and twenty-six miles distant from Chingleput. It is a large and important place, and the head-quarters of the Madras Artillery.

Palaveram is a small Military Cantonment, situated on the Great Southern Trunk Road, about three and a half miles distant from Saint Thomas' Mount, thirteen and a half miles from Madras, and twenty-two from Chingleput. It lies about four and a half miles in a direct line from the Coast, and was originally intended as a station for four native regiments, subsequently for two, and formed the head-quarters for Cadets. In consequence of the removal of the native regiments, most of the bungalows were pulled down by their proprietors. In 1846, the European Artillery Veteran Company was sent to garrison the place, and in 1852 the Native Infantry Depôt for regiments in Burmah was established here. Subsequently, two Companies of H. M.'s Regiment at Fort St. George were located here by turns for carrying on ball practice. It now forms, in addition, the head-quarters for the European Veterans.

The Cantonment has always been considered healthy. It is about 1½ miles in length and half a mile in breadth, with a range of hills on its southern side running east and west through the entire length of the Cantonment. The few Officers' bungalows which still exist are at the foot of the hills. There are four pucka-built barracks about 500 feet distant from each other, with a two-storied building in the centre as the Main Guard. The upper story is used as a place of worship now, the Chaplain from St. Thomas' Mount officiating every Sunday morning. The other public buildings are the Serjeants' Quarters, Regimental Store Rooms, Solitary Cells, Post Office, &c.; about half a mile from the barracks, on the western side, are the sepoys' lines, bazaars, and native part of the town; these are well built with open streets, and are kept clean and tidy.

There are three dwelling houses built on the hills, which are frequently occupied by people from Madras in search of health. Several Staff Officers and others prefer to reside here on account of the salubrity of the place and cheapness of house rent. There is a Roman Catholic Chapel here with a Chaplain attached.

Poonamallee.—The depôt formerly of H. M.'s troops, now amalgamated with those of the late East India Company; is situated in 13° 2′ North Latitude, and 80° 8′ East Longitude, thirteen miles west-south-west of Madras, and about nine in a direct line from the Coast, and five from St. Thomas' Mount. The country is flat, but little above the level of the sea; and the soil, except where rice is cultivated, is of a dry porous nature. There are numerous tanks scattered over the plains from which the lands under cultivation are irrigated; from there being no marshes or accumulations of stagnant water or other sources of malaria, and from the openness of the country permitting the free circulation of the sea breeze, the station is very healthy.

The Cantonment is about half a mile square, and is traversed by the high road from Madras to Bangalore. At the western extremity are the barracks (capable of accommodating 500 men) with the Canteen, Coffee Room, and Library, the Officers' Mess-house, and a few private houses, generally occupied by the Military. About 400 yards eastward of these was the old Fort of Poonamallee, where the hospital, store-rooms, cells, &c., are located, the intervening space being taken up by a large grassy Esplanade which is occasionally used as an exercising ground by the troops; on the east and south of the Fort, and about a stone's throw from where the ramparts once stood, are the dwellings of the European Pensioners, a few private houses, the Roman Catholic Chapel, and general bazaar; and to the south-east, about three quarters of a mile distant, is the native village, containing about 6,000 inhabitants, chiefly cultivators. The Protestant Church, Garrison School, and lines of the native troops are situated at the northern extremity of the Cantonment. The Station Staff Officer, Depôt Surgeon, Protestant and Roman Catholic Chaplains, and, occasionally, a few Military Officers doing duty at the Depôt, reside here.

The only other public building at this place is the Moonsiff's Court.

Poonamallee is five miles distant from the Railway Station of Avady, with a good road leading to it.

The villages of Trivatoor and Trivanoor in this taluq are considered places of great sanctity by Hindoos, and, consequently, several annual gatherings take place in them.

Ennúr, (Ennore).—A small village on the Coromandel Coast, is about ten miles from Madras, in 13° 13′ North Latitude, and 80° 23′ East Longitude. It is one of the salt manufacturing villages, and has a large back-water communicating with the sea, is connected with Madras by Lord Clive's Canal, and with the Pulicat Lake by Cochrane's Canal. There are several European bungalows here, and from its being on the Coast it is a favourite place of resort for the residents of Madras during the hot weather.

The *Red Hills* is also much resorted to by the inhabitants of Madras in consequence of the regatta that takes place annually on the lake, when the place is crowded with spectators. A large choultry was built here some years ago by Mahomed Goolam Sahib, brother-in-law to the Dewan of the Nabob of the Carnatic, at the cost of some 10,000 Rupees, and is now used as a public bungalow by travellers.

3. *Trivellore* gives its name to the taluq, and is a place of some note in consequence of its large temples and its monthly and annual feasts, for the celebration of which natives flock from many parts of the Presidency. It is situated on the railway line, the town itself being two miles distant from the station.

The village of *Tripassore* is about two miles distant from Trivellore and thirty from Madras, being situated in 13° 7′ North Latitude, and 79° 52′ East Longitude. The village itself is small, and its chief products are rice and dry grains. In 1820 it was converted into a station for Chelsea Out-pensioners, who preferred remaining in the country; their numbers fluctuate, and at present there are about 35. The old stone Fort has been pulled down, its area contained a barrack for the Pensioners which has also been nearly all demolished. Adjoining the Travellers' Bungalow is a large building fitted up as a school-room and place of worship for those of the Established Church. There is also a Chapel belonging to the London Mission Society, and a Roman Catholic Chapel outside the area of the Fort. Besides these, Tripassore contains a large heathen temple of some pretensions.

Nagalapoorum in this taluq is a large village renowned for its sun worship or *suria poojah*, and for its dancing girls. It is located at the foot of the Ramagherry Hills, and is about twenty miles distant from Trivellore. This and several other villages in the neighbourhood were amalgamated into the District from North Arcot in 1859. It is noted for the Ramagherry Hills where a waterfall is reported to exist, and the Caubaukum range of hills in this vicinity formed at one time a favourite resort to gentlemen who were in search of shikar. A native Sub-Magistrate presides here.

4. *Ponnary.*—This is rather a large and straggling village, and forms the Kusbah station; it gives name to the taluq. In it are Coromandel and Pulicat.

Coromandel (known as Kurroomunel) is situated on the banks of the canal and back-water in this District, where some half a dozen European bungalows are frequently occupied by the European and East Indian residents of Madras, either in search of health during the hot weather or on pleasure excursions.

Palanoykadoo (Valecata of the Dutch, and Pulicat of the English), is an old Dutch town, established in 1609, and situated in 13° 25′ North Latitude, and 80° 24′ East Longitude. It is built on the largest island on the southern extremity of the Pulicat Lake, which is formed by the back-water and extends over a tract of about 50 miles in length and eleven in breadth and communicates with the sea. It is connected with Madras by Cochrane's Canal. Many of the old Dutch buildings, the church and the graveyard, considerably filled with tombs, continue here in memory of the occupation of the place by the Dutch. A few East Indians, and a Missionary of the Additional Clergy Society, reside here, and I believe there still are in existence at this place one or more families who are descendants of the ancient Dutch.

Arnee, a small village in the Ponnary taluq, has long enjoyed a widespread reputation for the manufacture of the beautiful Arnee muslin. It is chiefly inhabited by weavers.

5. *Madranticum* gives name to the taluq from being the Kusbah station. It is a large straggling village situated on the Great Southern Trunk Road, about fifty miles from Madras and fifteen from Chingleput. It derives some im-

portance from the location of several wealthy Zemindars in the taluq. On the east it extends to the Coast, and in the villages of *Cheyoor* and *Chunampet* there are salt pans. On the south it forms the boundary of the District from lying on the verge of the South Arcot District.

Carangooly is also a large village located two miles north of Madranticum. Here there is a large garden and house built by the late Mr. Plaice, and now used as a Travellers' bungalow, and at the village of Allumparva is the dilapidated old Fort which formerly belonged to the Dutch.

6. *Conjeveram.—Kanchipurum,* vulgarly abridged into *Kanchi,* and corrupted by Europeans into Conjeveram, may be termed one of the strongholds of idolatry in Southern India.

1. Geographical position.

The name of this celebrated town (which also gives its name to the taluq), is derived from the Sanscrit word *Kanchin* or gold, and, owing to its wealth and importance in Hindoo mythology, this ancient town received the name of *Kanchipurum* or the Golden City. It is situated in North Latitude 12° 5′, and East Longitude 79° 57′. It lies about 48 miles to the south-west of Madras; 22 miles east from Chingleput; 40 miles from Arcot on the west; and is 17 miles distant from the nearest Railway station of Arconum towards the north.

2. History.

Kanchipurum is a place of great antiquity, sanctity, and Brahminical tradition, and traces its origin to King *Veru Sana Chullraverraty,* who is said to have built the chief pagoda in the place. The famous temples of *Kanchipurum* are the source of its historical fame and importance. It is impossible to fix the precise date of the origin of this city, or when it became a sanctified resort for pilgrims, but temples are said to have existed here from the most remote periods, and dedicated to Siva and Vishnu.

3. Topography.

The District around the town is, for the most part, flat: although there are slight undulations, these are scarcely appreciable. Sparsely planted *topes* of Palmyra trees are scattered about, and most of the adjacent villages stand in *topes* of Tamarind and Mango trees.

The view is not generally picturesque, or the landscape pleasing to the eye, for, from the country being open and level, and from the extent of waste land in it, it appears barren and arid. These waste lands are, for the most part, slightly elevated above the surrounding country, and are left uncultivated from the absence of water. On these spots nothing thrives but the Palmyra, which may be said to luxuriate on them. In the distance, some hills are seen skirting the horizon.

There is nothing worthy of mention in the geological formation of the place. In many parts a stratum of gravel lies under the loose sand, and when this is broken up the soil is found to be extremely fertile.

4. Rivers.

Vide, under this head, the description of the Chingleput Taluq.

5. General description of the town.

Kanchipurum is a large, open, native town, situated in a valley, and built in a straggling manner over five miles of ground. It is chiefly divided into two portions, termed Vishnu Cunchi, and Siva Cunchi: these are again sub-divided into several parts each, such as *Hodson*, *Shaik*, *and Punjee* pettahs. There are also numerous villages on the outskirts of the town. Taking the Post Office as a centre, about 100 villages, all known under different names, exist within a radius of five miles from thence; all these strictly form the bulk of the town of *Kanchipurum* itself.

6. Roads and streets.

The main road is that from Chingleput to *Kanchipurum* and that from Conjeveram to join the Great Western Trunk Road, both of which are unmetalled. A good metalled road runs from Cunchi to Arconum. Besides these, there are a few others, chiefly village tracts, for carts.

In Conjeveram there are about 250 principal streets, some of which are very wide, being about 30 or 40 feet in breadth; but in consequence of the roads not being metalled, nor any attention paid to them, they have worn away to 2 or 3 feet below the level of the houses on either side, the result being that, during the rains, these streets form miniature rivers, the water flowing through and forming standing pools in many parts of them: and when this subsides, a bed of coarse sand, several inches deep, is left along the roads, at all times extremely trying to draught cattle and pedestrians, and during the hot and dry months the scorching heat and glare of the sand, the stifling dust, and the yielding nature of the sand under foot, renders walking extremely fatiguing.

7. Dwelling houses.

The houses for the most part, and especially along the main street (which extends 2½ miles in length from east to west), are *pucka* built, and among these dwellings are numerous *chuttrums* or halting places for the travellers during the various festivals which are held here. The main street turns to the north and extends in that direction for about a mile, when it again dips a short distance to the west, and then finally turns to the north, leading straight up to the great pagoda of Siva.

A large proportion of the houses are built of chunam and stone, and are terraced, among which are a few two-storied buildings; but the majority are built of mud and bricks, and covered with tiles. The walls of a great number are painted with chunam, and on the outskirts of the town a few thatched houses are met with. From the previous remarks it will be observed that the majority of the houses are from 3 to 4 feet above the level of the adjoining streets. A few houses are met with having a European frontage only, and two or three are half native and half European.

8. Public buildings.

These consist of a Moonsiff's Court, Taluq Cutcherry, and Dispensary: the Post Office finds accommodation in a corner of the Moonsiff's Court-house. The Taluq Cutcherry is a two-storied building, and was formerly the Record Room and Travellers' Bungalow, but now forms the Taluq Cutcherry and chief Police station.

9. Hindoo temples.

The most conspicuous of the public buildings are the two large temples, one at either end of the town. That at the entrance of the town on the east is surrounded by very high and massive walls built of granite slabs, and covers a considerable area. On the east and west are two tall *Gopurras* by which the temple is entered, the base of which is also built of granite but the body and apex of chunam stone, and said to have cost a fabulous sum. This temple is dedicated to *Vishnu*, and is very rich in jewels, &c. Within the enclosure formed by the walls, are a great number of buildings consisting of *choultries*, *mundebums*, *vimanas*, &c., all built of granite, richly carved, the roofs supported by monolithic pillars, covered with sculptured representations of deities, mythological events, and griffins. All these places appear to have been built without any reference to each other. The *Dkurmacurthas* (or Churchwardens) of this, as well as of the other principal pagoda (Siva's), are extremely polite and obliging, and readily exhibit their treasures to Europeans. In one large pillared hall are shewn the figures of horses, elephants, and various fabulous animals, made of wood and painted. On these the idol is carried about in religious processions. The Churchwardens take great pride in shewing the jewellery, and especially point out those articles presented by Europeans in former days. Lord Clive, Sir T. Munro, and Mr. Plaice and others, are mentioned with much stress as donors of jewels to this temple. The principal article consists of a golden palanquin,—the frame is made of wood laid over with thin plates of embossed gold,—said to be the gift of a begging Brahmin and valued at Rupees 25,000. The necklaces, armlets, earrings, &c., which form the greater portion, are of precious stones of various kinds in their rough state, and rudely set in gold. Europeans are not admitted to see the idol. On one side of this pagoda is a large fruit garden belonging to it.

The temple of *Siva* is much like the one already described, but is not so rich. From the top of the only *Gopurra*, which is ascended by flights of very steep stairs, a fine bird's-eye view of the surrounding country is obtained, and on the walls (of the uppermost story) are written the names of those Europeans who have at different times made the ascent, and some of these inscriptions bear a very ancient date. At this temple, a huge silver bull, with a golden saddle, is shewn, and on this the god *Siva* rides when he goes in procession through the town. Besides this, there are several large wooden griffins, palkees, &c., gaudily painted, on which Siva makes his peregrinations in the town on various festive occasions.

10. Mahomedan durgahs.

In addition to the Hindoo temples, there is a Mahomedan durgah of Shah Ahmed Howbeah, which has, I believe, been endowed with an annuity of Rupees 1,000 by Government. This is a large mosque-like building, built of brick and chunam, and gives cover to the tomb of Shah Amed, who is called a saint. The place is well kept, with a neat garden on either side, and a sand-covered path leading to the building in the interior, which is some distance from the porch or gateway.

11. Charitable Institutions.

Patcheappah's Charity.—This consists of a large well-built *chuttrum*, where grain is daily distributed to about 24 religious mendicants, and on festive occasions to an unlimited number.

Conniah Chetty's Charity.—This consists of a *chuttrum* also, where 12 Brahmins are served twice a day with cooked food throughout the year.

Tanjore Rungiah Naidoo's Charity consists in feeding 12 Brahmins in a *chuttrum* with cooked food twice a day; but owing to a dispute, this has been in abeyance during the last year.

There are, besides these, three *Choultries* on the outskirts of the town, established by Chettiar Padah, where ¼ measure of beaten rice and the same quantity of rice floor is served out daily to all religious mendicants who come from the north.

Lallah's Choultry.—Here rice, dholl, and condiments are daily served out to travelling mendicants.

These Charities are one of the causes which attract so many religious mendicants from all parts of India. They frequently arrive in the most wretched condition brought on by want and fatigue, and a majority leave their bones here in memento of their pilgrimage.

12. Religion and Feasts.

The religion is strictly Hindoo, and comprises the followers of Vishnu and Siva; they are sub-divided into different sects. There is a good deal of ill-feeling between these rival sects, more especially between the Thengalays and Vuddagullays, who worship Vishnu. Both these sects are very powerful, and there is a constant strife between them for precedence in the various feasts and ceremonies, especially that which takes place in May. At this time, fears are always entertained that the peace will be broken, and to prevent such an occurrence a large body of Police is always present.

It is impossible to describe the immense concourse of people which assembles at this place on the occasion of the great festival ; the place is literally crowded with human beings, whose numbers exceed 200,000. Every house, verandah, *tope*, or other place of shelter, is occupied. The streets are lined with temporary booths and *boutiques*, where flowers, sweetmeats, native scents, ornaments, beads, brass utensils, &c., are paraded for sale.

In addition to this, there are minor festivals constantly going on throughout the year. Pilgrims, devotees, and feast-goers are attracted here from all parts of India, and a large body of mendicants and rogues of all kinds flock here to make what they can.

13. Educational Institutions and schools.

Besides those already mentioned in the general description of the Chingleput District (which see), Cunniah Chetty has provided for the education of twelve, and Tanjore Rungiah Naidoo for that of twenty-four Brahmin boys in Sanscrit, in connection with the different charities which bear their names. There are also several small vernacular private schools met with in various parts of the town.

14. Tanks, water reservoirs and wells.

There are but two large tanks, and these are generally dry from four to six months of the year, and are situated on the outskirts of the town. They are recognized by the names of *Conayree Coopum*, and *Nuthayputtay Ayree*.

There are about twenty stone-built reservoirs or Brahmin tanks within the town of Conjeveram, and some of fair dimensions situated in different parts of the town, a few being within the enclosure of the various temples. These, for the most part, contain abundance of water; but from the filthy system in existence in every native town—the majority of the inhabitants not only performing their daily ablutions, but also washing their dirty cloths here—the water abounds with animal and vegetable organic remains : thus the water drunk by the greater portion of the inhabitants, who are unwilling to go a little distance and procure better, is very impure. The town contains numerous wells, but in all places the water lies deep, between 30 and 40 feet below the surface. The water from most of these wells is brackish, and unfit to drink.

15. Inhabitants.

The population of this town, as given in the Official Quinquennial Census taken in 1861-62, is 28,620 : this, I think, includes only what is called the town of Conjeveram itself, independently of the hundred villages which skirt it; but the officials themselves do not consider this census even approximatively correct. Well-informed natives of the place consider that the population exceeds 60,000.

The whole population, divided into castes or professions, will stand as follows:—

Brahmins	$\frac{1}{4}$
Weavers	$\frac{1}{4}$
Pot-makers	$\frac{1}{16}$
Canarese	$\frac{1}{16}$
Silk-weavers	$\frac{1}{16}$
Bulgeevaudloo Conthala and Pullee	$\frac{1}{16}$
Merchants Chetties Moodelliars Mahomedans Comooties	$\frac{1}{4}$

16. Trade.

The chief trade is that of the weavers, who manufacture cotton goods very largely, and there are a few silk weavers. A large quantity of castor, lamp, gingelly, and ground-nut oils are expressed here by native mills. All other products are imported from the surrounding villages, or brought in from a distance.

17. Weavers' distress.

A small portion of those who follow the trade of weaving, are Mahomedans, so that these, with the Brahmins, form the bulk of the population. Owing to the American war and the dearness of twist, these people have suffered from the failure of their trade; but the destitution thus caused has been greatly exaggerated. As yet, it has only affected the paupers among the weavers, and the majority of these have already disposed of their looms and turned their attention to other occupations. As soon as it became known that these people were likely to suffer from want, such arrangements as were necessary were made, to the extent of the funds at the disposal of the Committee of Management, to meet such contingencies. The Madras Chamber of Commerce have since placed at my disposal Rupees 10,000, out of Rupees 80,000 munificently subscribed for the purpose by some Parsee gentlemen of Bombay for the use of the distressed weavers. Applications for labor have come in from all parts of the country. Those who are willing to proceed to other countries will have their expenses paid them, and on reaching their destination will receive 4 annas per man, and annas 2 and pies 8 per woman a day. These are liberal terms for manual laborers, but the weavers have entirely set their faces against manual labor (other than their own trade), as also against emigration, and even object to go from here to Madras; and as yet, I have only succeeded in getting some half a dozen of them to take to manual labor. What the weavers ask for is money-advances to carry on their trade, and singularly enough they admit that their trade is on the wane and not likely to revive again even if twist becomes cheaper. They are already deep in the books of the Soucars and cloth merchants, and, as a class, they are addicted to drinking and dissipation. Under these circumstances, I could not undertake to make them money advances, but am willing to find them employment as gardeners and laborers, and to teach them rope and mat-making, and the extracting of various fibres, all of which will, I am convinced, find them lucrative employment, and I have further offered to pay them at the market rate for their labor, but they have not as yet come forward.

18. Dispensary.

This building is situated at the western end of the town, on the *bund* of a large, square, stone-built tank, and was originally a Government Travellers' bungalow; but some years ago it was sold and passed into private hands, from whom the Committee of Management of the Dispensary purchased it outright. The Honorable R. S. Ellis, Collector of the District, performed the ceremony of opening it in the presence of most of the respectable inhabitants of the town who had assembled for the occasion.

The building runs north and south, and the entrance on the south is protected by a verandah. This leads into the reception room with surgery and store-rooms on either side. At the back of these are two wards, one behind the other, and surrounded by a verandah. Since the purchase of the building by the Committee, an upper room 18 × 12 has been covered in, the out-houses thrown down, and two rooms 12 × 12 protected by a verandah, as also a cook-room and dead-house at the back, have been built. In front, a thatched building has been erected and divided into two apartments one intended as a Cholera ward, and the other as a spare ward for any special purpose: these are 12 × 12.

This building is in every way adapted for a Dispensary, excepting that it is not in a central situation, but lies on the western outskirts of the town. Another piece of ground in a more central position, consisting of three-fourths of a *cawnie* has been granted by Government, on which it is intended to build a dispensary.

9. Donations of land.

Thirty-eight *cawnies* of wet and dry land have been made over by deeds of gift duly executed by the inhabitants of the district. These have all been farmed out, and Rupees 33-12-0 will accrue to the Dispensary from this source; but as these lands were given for the benefit of a purely charitable Institution, it is intended to apply to Government shortly with the view that the *Teervah* (tax) may be done away with, which will go towards the Dispensary: thus the item of income from this source will be increased from Rupees 33-12-0 to Rupees 147-2-7. At the same time, Government will be solicited to remit the tax on the invested funds.

Thus, without any assistance from the Government, the inhabitants have Rupees 2,000 invested in the 5½ per cent. Government loan, a floating capital in the hands of the Agents, 38 *cawnies* of land, a building of their own for the purposes of a Dispensary, and an average monthly subscription of Rupees 25.

20. Sanitation.

Conjeveram being a purely native town, no efforts are ever made either to drain the town, preserve it in a state of cleanliness, provide it with proper roads, or to prevent its water-supply from pollution. Consequently, the village pigs are the only scavengers, and had it not been for these animals it is impossible to say what the results might have been: as it is, they are not sufficiently numerous to devour all the human excreta and other filth that is spread over the length and breadth of the town. On festive occasions, not only the outskirts but every corner about the place is covered with human excreta, and should it happen to rain, which it frequently does during the most important annual festival in the month of May, the town is washed out, and the solution of night-soil lying about the streets and carried about from place to place, creates a most offensive and disgusting smell. There are no latrines or other places of convenience for the public, and, frequently, the putrifying remains of mendicants and pilgrims lie about the outskirts till devoured by dogs or pigs.

The water-tanks are polluted to a frightful extent on these occasions, and they swarm with human beings, men, women, and children, almost nude, who bathe their persons and wash their cloths side by side, and so densely crowded are the margins of the tanks that there is a struggle for room. The water, on examination at this time, is found loaded with organic remains. The Police do all that they can, and to some extent succeed, in having the chief thoroughfares superficially cleaned, and this is as much as they can do without a scavenging establishment. On festive occasions the roads are drenched with water to lay the dust and cool the burning sand that scorches the feet of pedestrians, from which cause every hollow forms a standing pool where filth of every description, in addition to the remains of fruits and vegetables, are thrown, and, accumulating, form a most disgusting cess-pool, from which a most offensive smell issues, poisoning the atmosphere around; dozens of these putrifying pools lie unheeded in the very centre of the principal thoroughfares. Nothing can be done to remedy this state of things until a Municipal Association is organized in the town.

21. Soil.

The soil in and about Conjeveram is sandy, changing here and there into a sandy loam, which seems rich in minerals useful for the successful development of vegetables and plants; but in some parts isolated patches of clay beds are met with.

There is a great sameness of soil throughout, and its being open and porous the water is readily absorbed and the surface left becomes brittle and sandy; water is at all times scarce for agricultural purposes.

22. Productions.

Notwithstanding the scarcity of water, the natives manage to cultivate vegetables. All the native vegetables are cultivated in and about the place, and large supplies are brought in from the surrounding country. Cocoanut and tamarind trees are met with everywhere in large numbers, and mangoes, jack, plantain, orange, lime, pumplemose, &c., grow in all the fruit gardens, and are said to yield well. Some patches of dry and wet cultivation are carried on in and about the town; the latter are irrigated from river channels. The palmyra grows in abundance on the outskirts.

The village of *Wallajahbad* is also situated in this taluq, and is skirted by the Palar river. It was formerly a Military Cantonment, but has been abolished as such since the year 1850. All the public buildings have been thrown down, and the materials sold by auction. The only European bungalows now remaining are, one in the possession of the Free Church of Scotland's Mission, and another, the property of the late Colonel DeSalis, which continues vacant. The grave-yard is well filled with tombs, and the names of some officers of note interred there afford the only evidence of the place having once been a Military station. The village is about three-quarters of a mile in length and half a mile in breadth, consisting principally of a single street. It runs from east to west, and is situated in North Latitude 12° 58′ and East Longitude 79° 39′ being 35 miles west of Madras, 14 miles distant from Chinglepnt, and about 28 miles in a direct line from the coast. The country around is flat and low.

About ten miles north of Conjeveram, and the same distance from Streepermadoor, is the village of *Polilloor*, where, in the midst of a large garden, are to be seen the tombs of Colonels Hyde and Floyd, and others who fell in the struggle between Hyder Ali and Colonel Baillie first, and subsequently between General Coote and Hyder Ali in 1780. At *Balchetty's Choultry*, tombs of other British Officers who fell in these stirring times are met with.

At *Keelacherry* and *Cheveylamodoo*, villages in this District, exist large gardens, laid out in the former by Mr. Plaice, and in the latter by Colonel Floyd,* and now the property of natives of the District, but still recognized by the names of the gentlemen who originally established them; near Perumbaukum, on the old Bangalore road, is a large plantation containing trees of various kinds originally planted by Mr. Plaice, a former Collector of the Jaghire. It still goes by the name of "*Plaice Thothum*" and now belongs to Dr. Fennelly, Roman Catholic Bishop of Madras, who has a farm there.

The village of *Streepermadoor*, which is situated on the Great Western Trunk Road, possesses a large bungalow formerly used by travellers, but it has lately been made over to the Department Public Works. Here also is to be seen a large *chuttrum* built of brick and chunam by Vencatarunga Pillai, for the use of native travellers with a Brahmin attendant, who is paid and the building kept in repair from funds endowed for the purpose. This building is now under the charge of the Collector of the District.

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* A copy of the original correspondence between Colonel Floyd, the Collector of the District, and the then Governor of the Presidency, who conferred the grant of this land on Colonel Floyd, may be seen in the possession of the present owners of the garden, descendants of the Colonel's butler.

It also contains a large temple dedicated to Vishnu, in honor of whom a grand festival takes place here in the month of April. Since the opening of the South Western Railway, the Great Western Trunk road has been forsaken by travellers generally.

7. *Chingleput* (Singhalapetta), the head quarters of the District and the Kusbah station of the taluq, is a small village situated in 12°46′ North Latitude, and 80° East Longitude, being 35 miles south-west of Madras. It derives its importance from the Civil and Sessions Court being held here, and from being the residence of the Judge and other European Officers. It contains a population of 4,406 inhabitants.

By taking a bird's eye view with the Fort as a starting point, the topography of Chingleput appears as follows :—It is surrounded on the east, south, and south-west by hills, through which a valley about three miles in length runs due north. The town of Chingleput lies on its western side. On the east and partly on the north, the Fort is surrounded by a large artificial tank, on the western side by an open tract of land now under cultivation, and on the southern side is situated the town of Chingleput at the foot of a small range of hills running from north to south. The town is advantageously situated for mercantile as well as political purposes. It is about three quarters of a mile in length, and a quarter of a mile in breadth, running north and south. At the entrance of the town on its northern side, two roads diverge from the Great Southern Trunk Road, one to the east and the other to the west, the one passing through the eastern part of the town, the other on the western side, both converging meet the Great Southern Trunk Road, which runs through the centre of the town, a little beyond the Civil and Session Judge's house. On the western side of the Fort and about half a mile distant from it is the adjoining village of *Nuttum*.

The Judge's bungalow and the other five European houses are situated in an irregular valley about a mile south of the

Fort. The locality is surrounded by numerous hills which vary in height from one to five hundred feet and are for the most part covered with low jungle. The valley is more open on the east, the hills being at some distance, and the intermediate space being covered with low jungle towards the east and south-east.

On the north lies the lake before-mentioned, the water of which is retained by a *bund* nearly a mile in length, the top of which formed the high-road formerly. Since the year 1858 a new line of road in connexion with the Great Southern Trunk Road has been made through the rice-fields, but the road on the *bund* is still used as a cart track. This lake affords an abundant supply of water for the cultivation of paddy, &c., in consequence of which a succession of crops is frequently raised in its immediate vicinity, forming one of the staple products of the District.

The public buildings outside the Fort are the Dispensary, Public Bungalow, Roman Catholic Chapel, the Post Office, and the Sub-Collector's Cutcherry which is a rented building.

The *Civil Dispensary* was established in 1850 and continues to work satisfactorily. The accompanying table shews the relief afforded by this Institution during the last ten years.

Average of the In and Out-patients of the Civil Dispensary at Chingleput.

Year.	In-patients.	Out-patients.
1854	18	71
1855	12⅓	69½
1856	14¼	69
1857	10⅓	65¼
1858	14	64¾
1859	16	61¾
1860	13⅙	61¼
1861	12½	59½
1862	11¼	59¼
1863	10¼	61¾
Total......	132½	643

Efforts continue to be made to render this Institution self-supporting, with a promise of success.

The *Public Bungalow* is in two divisions, each containing a sitting and small dressing-room and bath-room, the whole surrounded by a verandah enclosed in a compound with out-offices. It is partially furnished with furniture, crockery, &c. A butler, waterman, and scavenger are attached for the convenience of travellers. By the recent orders of Government, a fee of eight annas for six, and a rupee for twenty-four, hours' stay is demanded from travellers for a room occupied by one or more persons, to cover the expenses of attendants, &c. The bungalow is close to the western side of the town, and is conveniently situated for procuring supplies, &c. The ground on the eastern and northern sides is open, and is generally used as a cart-stand by carts passing through the town and remaining a day. On the northern side of the bungalow and some little distance from it, is the Roman Catholic chapel. This locality has undergone considerable improvement, the ground around having been taken up and a monastery and other religious buildings are in course of erection; a garden or *tope* is in course of formation on the west. The high road to Wallajahbad passes close to the building, but is only metalled within the precincts of the town, beyond which it is unmetalled and sandy.

The *Post Office* is situated on the Great Southern Trunk Road nearly opposite the way leading to the Fort, it is a small one-roomed building with a verandah in front.

The *Fort* is situated about 34¾ miles from Madras, and 1 mile from the European portion of the town. It is tolerably large and is reputed to have been one of the strongest in India. It was taken by the French in 1751 but it was re-taken by Captain, afterwards Lord, Clive, in 1752, after a short siege. It is surrounded by ramparts and a wet ditch about two miles in circumference, with an inner rampart and wet ditch dividing it into two portions, an outer, and an inner Fort, the latter comprising an area of 400 yards from north to south, and about 270 yards from east to west. Of late years the Fort has been pulled down, the inner wing of ramparts facing the boundary of the inner Fort has been demolished, the inner ditch filled up, and the eastern part of the ramparts is now in course of demolition, as well as the outer wall of the southern ramparts adjoining the Jail cells which is now re-placed at a distance of fifty feet by a granite wall from the *debris* of the old Fort.

The public buildings within the Fort comprise besides the *Jail* and its *Hospital*, the *Court Houses*, *Tuhsildar's Cutcherry*, the old *Veteran Barracks* now in the occupation of the Inspector and European Head Constable of the Mofussil Police, houses of the Jailor and Superintendent of looms, the *Rhai Mahals* and a large bungalow with garden attached the private property of a native.

The *Rhai Mahal* is an old three-storied building, strongly built of brick and chunam, situated within the inner wall of the Fort. The lower story is converted into a store room, the second contains Civil debtors, and the upper division is used for female prisoners and juvenile offenders, &c.

The *Jail*, which was established in 1802, is well adapted for the purposes for which it is employed, being secure, capacious, and well ventilated. It is situated on the southern side to the right of the entrance between the inner and outer walls of the Fort, close under the outer ramparts, and extending to the counter-scarp of the inner ditch, "a situation very ill-chosen for health, but less objectionable since the demolition of the ramparts." The wards or night cells form two enclosures, a quadrangle and a parallelogram, the former contains seven and the latter five rooms, and a solitary cell. These several wards or rooms vary in size from 39 by 15 feet to 15 by 9 feet, and the whole is encircled by an inner and an outer verandah. According to the regulated area directed by Government of 500 cubic feet of air to each man it is capable of accommodating 165 prisoners, but since the operation of the Indian Penal Code, the area allowed falls below that given above in consequence of the increased number of prisoners. The building is built of brick and chunam, the cross pieces and rafters are of trussed teakwood, the roof is tent shaped and covered with tiles. There are a few round holes or apertures in the walls, and two square openings in the roof of each cell; the other means of ventilation being by means of iron railed doors, the rails are about an inch and a half in diameter and three inches apart. All the windows, doors, and ventilators are open throughout the day, the doors are locked at 6 P. M., when the prisoners are shut in, and opened at 6 A. M. daily. The wards are kept extremely clean and dry, being frequently whitewashed; and the floor, which is tiled, plastered with lime-wash once a week.

The following is the scale of diet allowed to each prisoner.

Unboiled rice in weight..........	65 Rupees.
Salt....................................	3 „
Tamarind..........................	1¾ „

with a sufficient quantity of curry-stuff and five Rupees weight of *dholl* every other day; during the season, fresh country vegetables are served out. The food is prepared by the prisoners, about 160 form messes and the others mostly cook for themselves. A good number of the prisoners sometimes come from the District of Cuddapah and Chittoor, these as well as some of the low-castes such as Karavas, &c. are accustomed to rice boiled with raggy, cholum, and cumboo, in the form of porridge or cakes, while all the others are accustomed to curry and rice, the former generally made of vegetables, once a week with mutton.

Clothing.—Each prisoner is allowed annually two pieces of cloth 9 feet 5 inches long and 3 feet wide with two *lungoties,* each 3 feet long, and 1 foot wide, and two cumblies, each measuring 8 feet 3 inches in length, and 3 feet 5 inches in breadth. No bedding is allowed in the cells. The cost of clothing per head per annum is Rupees 3-7-4. Women are allowed two cloths each, with one large cumbly, the cloths measure 15 feet in length, and 3 feet in breadth, and cost Rupees 4-4-6.

Work.—The prisoners are chiefly employed in road-making. They work on the Great Southern Trunk Road within a distance of five miles, as well as on those about the town, and some are employed in the Jail garden growing hay. About fifty are employed in weaving cloths, &c., and a few of the more aged and weakly sweep the Jail and its vicinity clean. The prisoners work out daily from 8 A. M., to 4 P. M., with an intermediate hour of rest at noon (1 P. M.) during the hot weather.

Hospital.—The hospital is bounded on its western face by a wing of the inner ramparts, and on the eastern and southern sides at a distance of 12 feet from the building by a strong brick and chunam wall about 8 feet high. The prisoners' cooking shed lies between the hospital and Jail cells in what was the inner Fort, forming a double quadrangle adjoining the hospital wall to the north, and connecting it with the inner ramparts, the greater part of which had been pulled down to the south and west. The double square is 103 feet broad and 184 feet long. A continued line of low sheds runs along the western and northern sides of the outer square, and on four sides of the inner; each shed being about 10 feet high and 8 feet broad. There are two wells in the inner square. The *Rhai Mahal* is situated in the northern angle with a third well in the outer square, and the wells contain an abundance of water for six months in the year, after which the supply frequently fails. The squares formed by the cooking-sheds are well planted with Banyan and Portia trees, and the prisoners are permitted on Sunday to take air and exercise here, to perform their ablutions and carry on a social chat under the trees. On the west of the *Rhai Mahal* and next to the hospital building, but situated within the area of the cooking-sheds, is a small dwelling house opening towards the north, the residence of the 1st Dresser.

The hospital is detached from the Jail. The length of the building is 122 feet. It is divided into three wards of irregular lengths and which do not communicate with each other. The largest ward measures 39½ feet in length, 15 in breadth, height of wall is 12 feet, and ridge of pent 5 feet. A surgery 15 feet square exists at the northern end. A verandah runs on both sides of the building; either side of the verandah is enclosed at the northern end and converted into a waiting and store room, 7½ feet wide and 15 feet long, the verandah itself being 9 feet wide.

The hospital has ridge ventilators in the roof, the walls are built of brick and chunam, and the roof pent with cross pieces and rafters formed of palmyra wood. In the same enclosure and at the back of the hospital are a dead house, lumber room, and cooking place. The privy is an open place surrounded by a wall 3 feet high. The wards of the hospital will afford accommodation to about 60 patients; there are five windows and a door to each ward, each window 4½ by 3 feet and secured by iron bars and wooden shutters, which can be left open at night during the hot-weather. The doors measure 8 by 4½ feet and are opened at 6 A. M., and closed at 6 P. M., daily.

The diet of the sick in hospital is left to the discretion of the medical officer who is at liberty to order bread, milk, rice, &c., as may be found necessary, the expense being defrayed by a contingent bill submitted for the sanction of the Inspector General of Prisons. The medical officer visits the hospital daily, and once a week examines the prisoners, visits the jail cells, cooking places, &c., and reports, if necessary, to the judge on the state and cleanliness of the buildings.

All prisoners admitted into the jail or on trial, are immediately submitted to the medical officer or his subordinate for examination, to see that they are not suffering from contagious or other complaints, and if found diseased, they are at once admitted into hospital. All prisoners are vaccinated on admission without reference to previous marks of vaccination or small-pox.

Health of the Jail.—This jail, which has hitherto been considered one of the healthiest, has, during the last two and a half years, become sickly. The mortality last year (1863-64), was 8½ per cent. of strength, and judging from present appearances, there is every reason to suppose that this rate of mortality is not only likely to continue, but increase. This has been brought about by over-crowding and partly by the system in vogue of growing hay. The over-crowding has been greatly remedied, but the growth of hay continues. The legitimate use of the jail garden in growing fresh vegetables for the use of the prisoners has been abandoned for that of hay cultivated in their stead. The system of cultivation is extremely obnoxious; not only does the hay from its succulency and tendency to retain moisture as well as to afford shelter to a host of ephemeral animal life prove a source of malaria, but the more pernicious system of bringing the reeking silt deposits from the beds of tanks and spreading it out over the hay fields to the depth of from one to two inches over a large surface is carried out, and thus increases the sources of malaria. In the absense of silt the offal and town sweepings are substituted, and to promote decomposition, irrigated. The result being that so much animal and vegetable matter as abound in this top dressing, when saturated with moisture and exposed to a tropical sun, must and does give out much marsh miasmata in the immediate vicinity of the jail, which prejudicially affects the health of the inmates. With the introduction of the growth of hay, *Beriberi*, a disease hitherto unknown either in the station, or district, has made its appearance in the jail, and as the hay cultivation extends, so does the sickness and mortality keep pace. The growth of hay is forced to such an extent, that every nook and corner is taken up with it, and even the Fort ditch or trench, —which hitherto remained waste and the marsh caused in it during the wet weather neutralized by the growth of numbers of aquatic plants that counteracted the noxious effects of the marsh and purified the surrounding air—has been planted with hay, which is now under two feet of water. The decomposition of so much vegetable matter must give rise to much marsh miasm and prove a further prolific source of disease, if not at present, at least during the next hot season when the marsh becomes dry.

Whatever advantages the growth of hay may possess in a financial point of view, it is not possible that a paternal Government would sanction its continuance at the cost of health and life of the prisoners incarcerated in the immediate vicinity.

Jail Sanitation.—The sanitary state of the jail calls for immediate attention. The drainage is out of order; the filthy system of placing large open-mouthed earthen vessels for collecting urine and allowing it to remain in the vicinity of the cells putrifying from 14 to 16 hours, and the pouring out of this putrifying fluid from vessel to vessel in the same vicinity, continues in existence. The burial of the night-soil of a large body of prisoners carelessly in the neighbourhood of the Jail garden, the allowing of cattle to trespass in the Jail cell verandah and soiling the place with their droppings, one and all call for immediate remedy. I do believe that if attention be given these subjects, it is possible to reduce the sickness and mortality going on in the Jail at present.

Table shewing strength to deaths during the last seven years.

Years.	Strength.	No. of deaths.	REMARKS.
1857-58	285	2	One of the seven died out of hospital without receiving treatment.
1858-59	300	7	
1859-60	292½	13	
1860-61	294¾	17	Two of the ten died out of hospital without treatment.
1861-62	347	10	
1862-63	414¾	34	Four of the 34 died out of hospital without treatment.
1863-64	341½	29	

The Chingleput taluq extends to the eastern Coast. *Sadras,* the capital of the late Dutch East India Company, is about nineteen miles distant from Chingleput, and contains several European dwelling-houses still in existence, and, in a more or less dilapidated state. The Dutch Governor's house, is now converted into a traveller's bungalow. Here a small Chapel and school belonging to the Liepzig Evangelical Lutheren Mission exist as also a Chapel belonging to the Goanese Catholics. The southern coast Canal skirts the town and extends some six miles beyond it to join the Palar river, and there is a constant intercourse with Madras by means of boats; three rupees is the fare for a trip to or from Madras to Sadras.

Mahaballipoorum recognized by the English as the Seven Pagodas lies on the coast and is about 30 miles distant from Chingleput and ten miles north of Sadras. It is a small village. A temple dedicated to Vishnu, stands on the Beach, and is washed by the spray; there are some other ruins visible, enshrouded by the waves, with several rocky knolls projecting through the surf; about half a mile inland are to be seen several small rocks surmounted with irregular boulders; in this vicinity it is said the Capital of the ancient Pandian Kings once existed. Many of the rock-carved temples have porticoes with various representations of Hindoo deities, animals and emblematical devices wrought in bas relief; several of the temples have each been chiselled out of a solid piece of stone, whilst the carvings, especially those of the animals, are executed with much spirit and some beauty. This is an attractive spot for Europeans interested in Hindoo mythology, who go to see these famous sculptures as they are termed; unfortunately there are no bungalows or place for staying, which renders the trip anything but agreeable unless tents are taken out by the visitors. The canal runs about a mile and a half from the place itself and about two miles from the Beach.

Covelong.—This place is further north of Mahaballipoorum, and is about 35 miles distant from Chingleput. Here there is a large Roman Catholic Chapel and other buildings connected with it, where an annual feast draws a great number of Native Christians from Madras. Here also a fine old bungalow (private property) on the Beach is met with, having a fine commanding view of the sea with the Beach water in the rear. This place is furnished partially and rented at two rupees the day; many gentlemen with their families from Madras run out here either in search of pleasure or health. There are also salt-pans here and a small English school in connexion with the Catholic Chapel.

Triporoor is a large village and a place of some pretensions from being the head quarters of the Siva· sect, and a large pagoda or temple exists here, to which the devotees of the deity Siva flock on each new moon day. In the vicinity is a large hill crested with another of Siva's temples.

Terookycoondum is a large village in the Chingleput taluq, about eight miles distant from it on the high road to Sadras. This is a place of some pretensions, the village having a large temple in it and another surmounting a rugged rock about 500 feet high with granite steps leading to its summit, where a couple of vultures are daily fed by the presiding priest at mid-day; the generality of the natives are deceived into the belief that these birds come all the way from Benares daily to receive their food, but they are merely the common vultures, (Neophron pernopterus) that hover about the place.

Salubrity of Chingleput.—A residence of six years, as well as the previous history gleaned from the records of the hospital, enable me to state that sickness does not prevail to any usual extent in the town or district. My own observations lead me to infer that it is a healthy place, although, during the hot season, and more particularly the months of July, August, and September, just before the commencement of the north-east monsoon, the drying up of the large tanks leaves exposed to the action of the sun, quantities of decaying fresh water algœ which gives rise to mephitic exhalations. At certain times, more particularly after slight showers of rain, and when the wind blows from the north-east or west, a nasty disagreeable odour is perceptible from some distance, but although the smell is disagreeable I am not aware of its having proved prejudicial to the health of the inhabitants.

In fair weather the tank (adjoining the Fort) is six feet deep under the Fort walls; the inner ditch which measures 288 feet in length and 133 in breadth has been filled up to a great extent by the debris from the demolition of the inner ramparts on the southern side.

The general *area* of the district is 21,717 square miles. Of this, 499,075 acres are waste land.

Justice.—In addition to the Civil and Sessions Court at this place, there are four District Moonsiffs for dispensing justice to the inhabitants at the following places in the District—*Poonamallee*, *Carangooly*, *Conjeveram*, and the additional Station Moonsiff at *Chingleput.* The Magistrate of the District holds his Court at Sydapet, and the Joint Magistrate at Chingleput, the Assistants and Tahsildars in their various Kusbah stations.

Police.—The present Mofussil Police was organized in 1859. The strength at present comprises—

Superintendent...	1
Inspectors	17
Constables...	700

the number of the last class has been lately augmented I believe.

This institution is now fully established in the District, and the opposition it met with on its first introduction has now disappeared, and the Police, as a body, are giving satisfaction and discharging their duties creditably in the protection of life and property and suppression of crime. My duties as Local Superintendent of Vaccination have afforded me the opportunity of watching their operations in the most remote parts of the District when beyond the ken of their immediate superiors, and I am happy to state that in every station or out-post, and in their daily beats, wherever met with, the Police were invariably on the alert, and discharging their several duties satisfactorily, so far as I could judge as a spectator, and from what the residents of the different villages had to say on the subject, they undoubtedly possessed the confidence of the people of the District.

Rivers.—A branch of the *Palar* river runs about one mile west of Chingleput and is again crossed on the Great Southern Trunk Road about 3½ miles from the town. The bed of the river presents to view a vast sandy plain about a mile in breadth and having three small artificial streams which seldom run dry and are used for the purposes of irrigation. The bed of the river is dry for a great part of the year, but during the monsoons the river swells to an enormous extent from the freshes bringing down large quantities of water, and on these occasions the force and rapidity of the current is so great that it is impossible to ford it, and common country boats are had recourse to in order to cross it.

This river takes its rise in the neighbourhood of the *Pennar* in the Mysore Province among the hills of Nundidroog, and branching from the *Palar* which runs between Arcot and Vellore, enters the District about twenty miles east of Arcot, and, passing along the western skirts of the vicinity of Conjeveram under the name of the *Wegamutty*, passes on by Wallajabad, Chingleput, and Carangooly, and eventually empties itself into the Bay of Bengal between the villages of Sadras and Vapingary after a winding course of 220 miles.

Cheear.—This river is a small branch that traverses the District, from the south and joins the Palar in the vicinity of Conjeveram. It originates in the Chingamali Hills in the neighbourhood of Salem and North Arcot.

The *Cortialar* river takes its rise from the tank of Cavarypauck, about forty miles from Chingleput in the Chittoor District and passing along the Ponari taluq, empties itself into the backwater at Ennur, forty-six miles north of Chingleput.

The *Narnaveram* river rises in the Naggery Hills, passes along the village of Ponari and empties itself at Pulicat with the previously named river.

Cooum river originates in a village of the same name in the Trevullur taluq and empties itself into the sea at Fort Saint George.

The *Sydapet* river takes its origin from the District, skirts the town of that name, and lower down assuming the name of *Adyar* empties itself into the sea a little beyond St. Thomé, and the locality is now recognized by the name of Adyar from the termination of the river.

Tanks.—The large tank that washes the walls of the Fort of Chingleput, when full, extends over an area of from five to seven miles, but it seldom fills completely. During a residence of six years I have only seen it once full to overflowing; on another occasion I saw it three parts full, but it generally contains sufficient water to irrigate the rice-fields that lie below it on the north-west. There are several other tanks equally large, as those of *Chembrumbaukum, Madranticum, Outramaloor, Red Hills, Thennary, &c.* I believe there are altogether upwards of 3,000 tanks in the District. At Chingleput itself within an area of ten miles, there are upwards of ten tanks of smaller dimensions, in addition to which there are seven or eight square tanks paved with stone in the town and its vicinity, which are used for the purposes of ablution as well as for drinking. There are also a number of good wells about the District, every village having a few.

A brook rising in the tank of Thennary in the Conjeveram taluq passes along the western side of Chingleput a mile distant from the town and empties itself into the Palar river. It is covered by a bridge of three arches on the high road to Wallajabad, each arch having a span of 25 feet. This brook is deep and generally contains water throughout the year, and is resorted to by the town people during the dry seasons in consequence of the failure of the water in most of the wells and tanks in the town.

Geology.—Scattered over this District are various ranges of small mountains with detached hills and rocks of primitive origin; the greatest does not exceed 500 feet in height, and huge masses of granite are met with over-topping and underlying the surface; these seem to belong to three different periods.

Granite, in a state of decay and disintegration, is met with in most parts of the District a few feet under ground, and in sinking wells a deeper strata is frequently reached in all its integrity.

The face of the country is a flat level plain, occasionally breaking into a slight undulatory rise in some parts. In others the soil seems made up of red sand, frequently giving cover to a bed of gravel occasionally mixed up with laterite; the gravel possesses excellent binding qualities and is brought into play for road-making. The vicinity of Conjeveram yields some fine sand-stone, occasionally found variegated irregularly into brown, yellow and lilac colours. In some parts of the District recent tertiary and alluvial deposits are met with, and, as elsewhere noticed, rich magnetic oxides of ironand materials for pottery and glass are found to exist, as also various other coloured earths and kunker, or small nodular lime stone.

Fossils of wood and shells of various kinds have been found in the vicinity of Streeperoombadoor; I have only seen specimens of the petrified wood.

Soil.—The soil of the Chingleput or Madras District varies in different parts, being mostly gravelly, argillaceous, and loamy. But along the coast and for several miles inland it is sandy with a substratum of clay, whilst in the interior it is alluvial, and in the vicinity of the hills and some of the high grounds it is composed of decayed granite and good binding gravel.

The District is extensively cultivated, rice forming the staple produce, in addition to which almost all the dry grains and pulses, Indigo, Sugarcane, Betel-nut and vegetables, European and native, are grown. At the same time, from the inability to command water in certain localities, the high lands are permitted to run waste, and become covered with low jungle in some parts; some of these might be turned to account by sinking wells in the neighbourhood; there is no doubt that springs exist in the soil and abundance of water might be obtained at a depth of from 30 to 50 feet below the surface.

The natives continue their ancient systems of cultivation, and, as a rule, do not practice the rotation of crops systematically. The lands are scantily manured. For rice-fields, recourse is had to leaves of trees, shrubs, and weeds, which are collected and buried in the rice swamps, and occasionally wood-ashes are used as manure. The cattle manure being generally used as fuel, the cultivators are thus deprived of an important supply.

Agriculture continues much in the same state as it has been for years back, but the darkened mind of the ryot is being enlightened from witnessing the operations of our railways and telegraphs, and the ryots are daily becoming amenable to the introduction of new products and improved methods of culture with the use of manure and other improvements. But at present they are restricted to the use of their own "crooked sticks" as ploughs, and all the ancient agricultural paraphernalia. It is to be hoped, however, that the day is not distant when the improvements of the West in agricultural operations will be found to have their place in the East, and we should not feel surprised if steam and machinery supercede human labor and animal power.

The principal Irrigation works in the District in connection with agriculture are given below in a tabular form. These works are under the charge of the Superintending Engineer of the 4th or Madras Division, who has under him a staff of six Assistants, one Supervisor and seven Overseers, distributed over the District, which is divided into four ranges, to each of which various officers are nominated to superintend and carry out all public works connected with irrigation, roads, and public buildings in the District.

e following are the Irrigation works of importance in the District of Madras :

nge No.	Village.	Tank, Anicut or Channel.	Taluq.	Remarks.
I.	Red Hills	Tank	Sydapet	
	Tinnanore	Do.	Trivellore	
	Goodapaukum	Do.	Sydapet	
	Casaveram	Anicut and Channel	Chingleput	
II.	Chembrumbakum	Tank	Sydapet	
	Corattore	Anicut and Channel	Chingleput	
II.	Tennary	Tank	Conjeveram	
	Coorum	Do.	Do	
	Govindavady	Do.	Do	
	Moneymungulum	Do.	Trivellore	
	Condunghy	Do.	Chingleput	
	Streeperamadoor	Do.	Conjeveram	
	Manumbady	Do.	Chingleput	
	Chingleput	Do.	Do	
	Cumbumkal	Channel	Conjeveram	
V.	Madranticum	Tank	Madranticum	
	Ootramallore	Tank and Supply Channel	Do	
	Cariencolothoor	Tank	Conjeveram	
	Yadamichy	Do.	Do	
	Salavancum	Do	Madranticum	
	Camarayapoorum	Do.	Conjeveram	
	Pennayar	Do.	Madranticum	
	Caliapet River	Channel	Do	
	Pennuyar do.	Do.	Do	

Bungalows.—There are at present ten Government bunlows in this District for the accommodation of travellers. e following are the stations in which they are to be found :

1. Atcherawauk.
2. *Chingleput.
3. *Goodoovancharry.
4. Carangooly.
5. Goomadepoondy.
6. Meenumbauckum.
7. Palavay Chuttrum.
8. Sadras.
9. Tripassore.
10. Poonamallee.

The two bungalows marked thus* are partially furnished, and have servants in attendance to meet the traveller's convenience, for which he pays a fixed rate of a rupee a day, or eight annas for a stay not exceeding six hours, for each room occupied.

Roads.—Three great trunk metalled roads pass through the District, the Great Western, Southern, and Northern. The Great Western runs upwards of fifty miles in the District, passing through the Conjeveram and Sydapet taluqs. It was at one time a great thoroughfare, but since the introduction of the Railway has fallen comparatively into disuse.

The Great Southern Trunk Road extends some sixty miles, and is a considerable thoroughfare, passing through the Sydapet, Chingleput, and Madranticum taluqs.

The Great Northern Trunk Road runs for some 35 miles through the Sydapet and Ponari taluqs. There are a great many feeders to these, for the most part unmade and a few simply marked out and bridged in some places.

Railway.—The South West line passes through the Sydapet and Trivellore taluqs for a distance of 29½ miles. The stations in the District are Perambore, Avady, and Tinnanore in the Sydapet; Trivellore in the Trivellore, and Cudumbathoor in the Conjeveram taluq.

Tramway.—A tramway is under construction from the Arconum Junction of the Railway, in the North Arcot District, to Conjeveram.

Canals.—The Eastern Coast Canal, passing towards the north, unites with the Pulicat lake, and thus forms a water communication with the adjoining District of Nellore. On the southern side it runs some fifty miles from Madras, and is continued up to the Palar river. A good deal of traffic is carried on in these canals by means of boats.

Telegraph.—Several lines run through the District, but the main lines are the Great Southern, Western, and Northern. The stations of St. Thomas' Mount, Palaveram, and Poonamallee, are connected by telegraph with Madras.

Population.—The District contains a population of 583,462, and, amongst the number, almost all the different castes met with in Southern India are to be found. The principal are Hindoos, Brahmins, Pariahs, and Mahomedans; among these an infinite number of sub-divisions exists. The supposed aborigines of the District are met with under the name of *Yenadie*, *Villie*, *Irruler*, &c. The greater part of these have no particular occupation and do not understand agricultural business. They simply barter the produce of the jungle in the shape of honey, firewood, medicinal roots, &c., for articles of food or clothing. They lead a semi-civilized life, and eat all kinds of animal food, not excepting the hyena, jackal, and rat. They talk the language of the District, more or less corrupted. Vide Proceedings of the Madras Government, Revenue Department, dated 17th May 1864, for an account of these people.

Dwellings.—These vary from the simplest hut to the magnificent house built after the European fashion. The huts of the poor are very rude constructions, consisting of mud walls plastered over a few stakes, thatched with palmyra leaves or thatch grass, with a solitary opening 2×2½ feet high for an entrance. These contain no furniture; a common mat serves as bedding to the occupants, who sometimes have not even that, the cloth they wear and a few earthen vessels constituting their all. The more wealthy are beginning to follow the European fashion in the use of furniture, and as opportunities offer they pick up a few odds and ends in the way of old chairs, tables, cots, &c.

Diet.—The diet of the upper classes consists principally of rice, ghee, vegetables, &c.; a few eat flesh and indulge in its use occasionally. The poorer classes live on rice or dry grains, according to the season. The latter are usually converted into meal and made into porridge or cakes, seasoned with greens or such vegetables as they can procure, simply boiled with salt or mixed with condiments and made into a curry. The lowest classes gloat over the carcases of dead animals, as cows, horses, &c., whenever they can get them.

Employments.—There is a large number of weavers in the District; artizans and labourers of all kinds are met with and are always able to find sufficient work of some kind or other. Many of these possess considerable skill as carpenters, smiths, stone masons, &c., but the chief employments are agricultural.

Amusements.—These are chiefly the feasts, &c., connected with their religion; occasionally they get up a native drama and are fond of their own hideous *tom-toms* and music, and will leave work for anything in the shape of sight-seeing. Nothing is too puerile to captivate their senses or to afford them amusement.

Customs.—These, with their ceremonies, are endless, and, for the most part, too unmeaning and numerous to detail. The people are extremely superstitious, and endless ceremonies are performed and sacrifices offered to blight the "evil eye," to drive away evil spirits, to invoke a blessing, injure an enemy, &c.

Morals.—Their morals are extremely base, purity of mind and body is not respected, their habits are unchaste, and the language in daily use among their own families and friends most obscene and indecent.

The women bathe with the men in public, their bodies half-naked, and the few clothes about them wet and clinging to their persons. But, with all this disregard of the exposure of their persons, to be spoken to or touched by a male before others is considered a great dishonor.

Education is now making rapid strides throughout the District. Excellent English and Vernacular schools have been established at Chingleput, Wallajabad, Conjeveram, and Trivellore by the Free Church of Scotland's Mission. At Conjeveram there is also an Anglo-Vernacular school endowed by the Trustees of Patcheappah's Charity, and a Sanscrit school established by the late Honorable Sadagopah Charloo. Besides these, there are Government Taluq schools at Trivellore, Streepermadoor, Ponnary, Conatoor, and Poonamallee. In the last-named place there are also one or two English schools, and almost every village has its own school. But the lower classes are for the most part entirely precluded from sharing in these advantages, for, although the taluq and other schools, not even excepting those of the Mission, are nominally open to all classes of the inhabitants, they are practically closed to Pariahs and other low caste boys. The fact of heathen and caste teachers being employed in Christian schools has much to do with this; and, on the other hand, the masters themselves, even when so inclined, have not the moral fortitude to break through this exclusiveness, through fear of breaking up their schools; but this is a fallacious idea, as I have seen good instances in one or two places, where on account of the admission of low caste boys, the schools were for a short time partially forsaken, but the pupils were glad to return to them ultimately.

These poor out-castes (Pariahs) constitute the great mass of the population, and efforts are necessary to benefit them as it is apparently the policy of the higher castes to shut out knowledge from them to suit their selfish ends. But I hope the time is drawing near when they will share in privileges to which they are as much entitled as those who now monopolize them.

Mode of rearing children.—The usual way is to suckle the infant for six months, when solid food is gradually administered. There are, however, no particular rules as to the limit of the period of suckling; and I have seen children three years old pulling at the mother's breast. In a great measure, the period children are suckled depends on subsequent pregnancies of the mother. The new-born infant is carefully tended and reared, except when the parents are in great want, and even then the mother will yield the last drop to her helpless child. The child usually runs naked until it attains the sixth or eighth year of its age.

Infanticide and criminal abortion.—These crimes are to some extent prevalent in the District, and are chiefly the results of early marriages and the prevention of the re-marriage of widows by caste usage. The Hindoo caste rules are so stringent, in the latter respect, that families frequently connive at such occurrences to prevent disgrace. In so doing, they do not think of the heinousness and moral iniquity of the crime, but countenance it in order that the delinquent may retain her caste privileges and social position.

Instances frequently occur when justice follows in the wake of such crime, and the criminal and her abettors are dealt with according to law. There were twenty-two cases of this nature reported in 1863, and twenty-seven persons convicted for the crime in this District.

State of the poor.—The poor are almost uncared for, although the natives in general are well known for their charity; it is exacted not so much from benevolent feeling or the relief of the poor, as for the support of their religious edifices, priests, and festivals, for the promotion of which large sums are ostentatiously given. There are no doubt many exceptions to this rule, but generally it is not the starving poor who are benefited by their charity, but those who may be denominated *fat beggars,* (religious mendicants) who are feasted and fed at almost every place they go to. Poor houses are not known; the only Institution bearing the name is one at Conjeveram, which was endowed by the late Patcheappah Moodelliar for feeding religious mendicants, of whom twenty-four receive alms daily, and on festive occasions. I believe the number is unlimited. But this may be looked upon more as a religious than as a charitable Institution for the benefit of the poor. The only Institutions having this for their object are the Civil Dispensaries at Chingleput and Conjeveram, where the *sick* poor are relieved, supplied with necessaries of life, and their ailments, often complicated, treated medically and surgically.

Prevailing diseases.—Endemic.—Fever and Ophthalmia are common among the inhabitants of this District. The prevailing type of fever is Quotidian, which, when neglected, frequently terminates in Remittent and Typhoid. The disease is generally of a very simple kind, brought on by exposure to cold, &c., but from being frequently neglected I have reason to believe that a large number annually fall victims to it.

Catarrhal ophthalmia is chiefly met with among children, and seems to be frequently connected with some disorder of the digestive system, and the presence of worms in the alimentary canal; a few doses of santonine and calomel with jalap often removing the affection of the eye as well as expelling the worms, only corroborates the fact of an intimate sympathy existing between the mucous membranes in the affected parts of the system. When, however, the case is placed early in the hands of some of the Vythians or native quacks it is not unusual to see it terminate in almost total destruction of the cornea, and irremediable blindness caused by the application of acrid substances to the inflamed organ.

Scrofula, in incipient or advanced stages, is frequently met with among the children of the very poor, and one ceases to wonder at its prevalence when he has visited the interior of some of these huts where the children are born and live. In a few cases, distinct evidences of its being associated with a syphilitic taint present themselves.

Epidemic diseases.—Cholera.—Cholera and small pox prevail epidemically in the District, frequently throughout the year; if either of these diseases quit one part of the District, it is only to re-appear in another. With reference to cholera, it is frequently brought on by the annual gatherings at Hindoo temples in different parts of the District. On such occasions, vast numbers of people congregate, exposed to all the vicissitudes of the climate, and, for the most part, living and sleeping in the open air and subsisting on anything they can get.

None of the native towns in the District are particularly cleanly, and when these festive gatherings occur the air is thoroughly vitiated with the gases from the decomposition of human ordure and vegetable and animal refuse, &c. Under these circumstances we need not be surprised at the occurrence of cholera. But the evil does not stop here. When the festivities cease and the crowd disperses, each individual carries the germs of the disease with him, more or less, from village to village, infecting every locality he passes through to reach his destination.

That cholera is infectious and capable of travelling along great thoroughfares, is undisputed. The opinions recorded by my predecessors are sufficient to clear up any doubts that may exist on the subject. Dr. Hamlyn writes on the 1st July 1839, " Cholera was brought into the bazaar here by a native, not an inhabitant, who died here on the way to his village. It appears the disease broke out about the middle of the feast (at Conjeveram), and that the deceased, with many hundreds, left immediately the disease made its appearance. A companion of the above died of the same complaint a few miles before he reached Chingleput."

In the Annual Report of 1853, Dr. Currie writes of this disease (cholera), " I may mention that two cases (both of which proved fatal) were admitted into the hospital later in the season, but they were not inhabitants of this place."

Dr. O'Neill writes in July 1857, " This dreadful disease (cholera) first made its appearance by attacking a tappal runner on the Madras road on the 7th June, and since that time two or three cases have occurred daily, out of which it has numbered thirty-four victims up to the present date."

In the Jail Report for 1859, it is stated cholera was imported into the town on two or three occasions by travellers passing through. A few cases occurred in the town, but the prisoners and the detachment of Veterans kept free of the disease.

In the Annual Report of the Civil Dispensary for the same year, it was remarked :—" A few cases of cholera occurred in the town in the month of September. The disease was traced to have been brought in here from Wallajabad, where, and in some of the other taluqs, it had been prevalent for some time. On the 22nd November, a detachment of recruits, to the extent of 200, encamped here, having cholera in camp ; they buried three men. On this occasion the disease hung about the town slightly for a few days, and then disappeared."

Such are the proofs given of the capability of this insidious disease being carried about from place to place; that it is infectious can also be proved. In 1857, the female servant of one of the Missionaries then resident in the Fort, went to see her son who was seized with cholera at the village of Nutham. The boy died, and she returned to her work, but was seized with cholera on the third day, and died of it. At this time the disease was not about the Fort, nor did any cases occur after this. Dr. Farquhar, in his observations on the Civil Dispensary in September 1860, states. "Another of the fatal cases was that of a woman who contracted it (cholera) when attending in her own house on a son who recovered. While she was in hospital, another son waiting on her was seized, but he recovered." I can call to mind several other instances where the disease was contracted by attendance on the sick. A point worthy of remark is that, in persons exposed to cholera contagion, should the system not be in a fit state to receive the disease at once, it nevertheless clings to the individual and takes advantage of the most favourable opportunity to attack him, in the meantime passing through a period of incubation.

Cholera, although prevalent in the District, frequently for most of the year, prevails to the greatest extent from the first appearance of the hot weather to the complete setting in of the rains.

Many theories have been broached as to the origin and manner of the propagation of the disease, but none have as yet thrown any light on this perplexed subject. There can, however, be no doubt as to its propagation from case to case by some subtle poison arising from the seat of the disease.

Several instances of the disease having been caused purely by fear have come under my observation; intemperance also is believed to be a fruitful source of cholera. As far as my own experience extends, it appears to me that the system is frequently protected whilst under the influence of stimulants, but the moment the effect of these is lost, the depression that follows at once favors the taking on of the disease, as, for instance, on the termination of a "*spree*" or debauch.

e had numerous instances under my observation of aking the disease at Conjeveram and arriving here ent good health and dying a day or two after, and en leaving Madras in health (where they acknow- aving been exposed to contagion) coming here and the disease several days after having been exposed luence. The last occasion was on the 24th Febru- , when two bandymen belonging to this place, on urn after disburthening their loads at Madras, were in transporting the hospital tents belonging to Her s 74th Highlanders from Guindy to Palaveram. On nent shifting its quarters in consequence of cholera, opriated to their own use the straw they found under s, and which had been previously used by cholera ; on their way homewards they had been sleeping raw, and both were seized with the disease and fell o its virulence the day after their arrival here. Some ree days after their deaths, cholera broke out in the ing to which two individuals seized with the disease nitted for treatment into the Civil Dispensary, and o days after the admission of these cases two in the hospital took the disease, one died and the overed.

pox.—This disease scarcely ever leaves the District, at no time entirely free from it.

igh every effort is made to promote vaccination, it sible to eradicate small-pox whilst the natives deify tribute it to the presence of the goddess *Mariatha.* ment is resorted to by them, but a few unmeaning es are performed and sacrifices offered to appease h of the goddess. No attempt is made to isolate sed from the healthy; all congregate together, and he scabs from the pustules have dropped, if the s sufficiently strong to move about, he mixes with le of the village, wearing the same dirty cloths, now l with infectious matter, which he wore during his Jnder these circumstances, can we wonder at the pre- and persistence of the disease. I have witnessed of secondary small-pox in a leper. The same was in the 5th volume of the *Madras Quarterly Journal of Science,* and will be found at page 187 of that volume.

ation.—The Zillah Surgeon is the Local Superinten- l he has under him a staff of six vaccinators, one to each taluq. It is impossible, with such a small staff of operators, to do much. Although the benefits resulting from vaccination are acknowledged by the native population, it is sometimes objected to on the ground of their not being accustomed to it, at other times the most stupid and absurd excuses are made. Even should they submit to have their children vaccinated, all kinds of objections are raised to allow of lymph being taken. They will not take their children to any distance for this purpose, and lymph on glass frequently deteriorates in the course of twenty-four hours in a tropical climate; at least, it is never satisfactory. Mothers take alarm when the lymph fails, and the children have to be cut a second and sometimes a third time before the operation succeeds.

These are some of the obstacles to the progress of vaccination. The staff of operators is too small; a larger number is required in order that each village may be visited several times in the year. By thus keeping the subject constantly before the people, they might be induced to adopt it much more generally than they do at present.

Several instances have occurred where small-pox has followed successful vaccination, but in all these cases the varioloid form of the disease shewed itself, a few scattered pustules appearing, of which only a small number are umbilicated, and the disease is generally very mild.

Measles prevails to some extent epidemically in the villages of the District. Sometimes it is found prevalent at the same time as small-pox, and the people confound one with the other.

Sporadic diseases.—Very many diseases, not even excepting cholera, are occasionally *sporadic* in the District, but the more ordinary of them are Ephemeral Fevers, Dysentery, Diarrhœa, Dyspepsia, &c, arising from cold, fatigue, improper diet and other acts of imprudence, and are of frequent and every-day occurrence. Under this head, syphilis and gonorrhœa may also be noticed in consequence of the numerous Hindoo temples in the District, each having its gang of dancing girls or prostitutes. Independent of these, other prostitutes of almost every caste flock here during the annual feasts to ply their vile trade, and during these occasions much venereal disease, especially gonorrhœa, is propagated, not only among the visitors but among the residents; occasionally also aggravated cases of secondary syphilis come under observation.

Hereditary diseases.—Under this head, Phthisis, Leprosy, and Cancer may be confidently entered. *Phthisis* being inherited, is frequently aggravated by impoverished food and the inhalation of foul polluted air arising from the filthy state of the neighbourhood in which most of the residents live. The hereditary taint of *Leprosy* is questioned by some authors. I have had many opportunities of tracing this disease to an hereditary descent, which, no doubt, is aggravated by improper hygiene. The natives will frequently attribute the disease to the bite of the *Uropeltis grandis* or *Munnullee pamboo,* which is said to possess a head at each extremity which are used by the animal six months alternately. Such stupid fables are frequently current amongst the best informed of the natives.

Cancer.—The most frequent seat of this disease is in the face, next in the breasts, and lastly on the genitals; occasionally it is met with also in the orbit.

Feigned diseases, as a rule, are not known in the District. In one or two instances which came under my observation, attempts were made in criminal cases to feign unsoundness of mind, but these futile attempts were too superficial, either to perplex or deceive, to be successful.

Local diseases.—Under this head every variety of ulcers and abscesses are met with (and wounds among violent diseases) aggravated greatly by want and neglect, the subjects themselves frequently tainted constitutionally with syphilis or scrofula.

Sanitary state of the District.—It is impossible to give a detailed account of the state of the various villages and towns. With the exception of the three Military Cantonments, and one or two other places in which Europeans or East Indians are located, scavengers are altogether unknown in the District; indeed, they are not even permitted to enter the streets of most of the caste villages, nor even to approach them; and the result is, that the vicinity of villages abound with filth of every description and rubbish in the shape of vegetable and animal matter lies rotting here from one end of the year to another, poisoning the air with its noxious effluvia. Either the public streets or the enclosures forming the yards of dwellings are frequently quarried to find materials in the shape of earth for raising the walls of their huts, and these pits are subsequently filled up with night soil, cattle droppings, sweeping, &c., thus becoming receptacles for filth, forming during the rains the most offensive stinking, pestiferous, stagnant pools, and poisoning the air around. Privies are unknown in any of the native villages. In some of the larger towns, some few of the more wealthy excavate holes for the reception of the night soils in their yards, and as soon as one becomes filled up another is opened out. From the vicinity of these to wells, the source of water supply is frequently polluted. The mass of the people make use of the unfrequented streets, bye-ways, and corners in and around the villages or towns. At most of the villages where annual gatherings take place, the pollution of such places from the deposition of cattle droppings and night-soil, &c., from crowded throngs of people and the numerous cattle and other animals that are huddled together on such occasions, is something beyond description, when it is remembered that these gatherings generally last from ten days to a fortnight in the hottest part of the year with no means of scavenging the place, whilst the village pigs and dogs are the only scavengers, and these are insufficient in point of numbers to carry out the work successfully. The crowds of people, with the cattle, &c., make the streets and principal thoroughfares their halting places; and when we take into consideration that the habits of the people are ordinarily filthy; that the majority of them are perhaps paupers attracted to the place by the feast, and that these either live on green vegetables and other improperly cooked food from the want of fuel and other conveniences, or they eat anything and everything they can get hold of in its raw or unprepared state; when we consider all this, we need not wonder at these places becoming the centres for generating deadly and infectious diseases on these occasions.

The water supply is not only inadequate in many places, but it is also very foul. With the exception of a few wells resorted to by some, perhaps the majority of the residents have recourse to stone-faced and other tanks for the purpose of drink as well as ablution. The supply to these tanks mostly consists of the surface drainage of the neighbourhood, carrying with it much of the night-soil and droppings of animals, and it now receives a further addition from the constant resort of men, women, children, and animals of every description, who not only wash their tainted and foul skins, but their clothes also in these places, struggling with each other for space, so crowded are these tanks on such occasions. If the fluid from any one of these tanks be now examined, it will be found to have attained almost a syrupy consistence, and abounding with vegetable and other organic remains. This is the kind of water the multitude not only drink but cook their food with.

There are no restrictions as to burials. These, where Mussulmen comprise the inhabitants of a village, are intra mural, frequently in the vicinity of wells or on the tank *bunds*, whilst the Hindoos cremate or bury their dead bodies on the outskirts of the villages. When the latter method is practised, the bodies are frequently placed within a couple of feet of the surface of the earth, so that the graves are plundered at night by jackals and hyenas, and the mangled remains are frequently met with in a piece-meal condition in the vicinity of the place; and even where cremation is practised, from a want of sufficiency of fuel, the blackened remains are met with frequently dragged about the vicinity by canine animals. Under such a state of things, can we be surprised at the frequent generation of zymotic and epidemic diseases, which, originating and being localized in such spots, soon attack and disperse the multitude, and the diseases themselves find scope in following the stream of human intercourse, thus spreading far and wide, frequently devastating villages and reaching some of the principal towns in search of fresh victims, and becoming localized wherever a nidus of filth is to be met with, to afford them support and food for further mischief. This state of things can only be realized to its fullest extent by ocular inspection, and it loudly calls for removal. The only way in which it can be remedied is by the appointment of a District Health Officer, who should in his duties be ably seconded by the Police. Periodic visits should be made to each of the principal villages, and every village or hamlet should have its public privy and be made to maintain a scavenger, whose duty it should be to keep the village privy clean under the supervision of the Police, and subject, as already suggested, to the supervision of the District Health Officer. If some such supervision be strictly carried out, it is possible that epidemic and zymotic diseases will soon become eradicated from the District, and eventually become matters of history.

Christian Churches.—The principal Christian Churches and Chapels in the District are as follows:

PROTESTANT.

1. *Church of England.*—St. Thomas' Mount and Poonamallee.
2. *Wesleyan.*—St Thomas' Mount.
3. *Independents, (London Mission).*—Tripassore.
4. *Additional Clergy Society.*—Pulicat.
5. *Leipzig Evangelical Lutheran Mission.*—Sadras.

ROMAN CATHOLIC.

1. St. Thomas' Mount.
2. Poonamallee.
3. Palaveram.
4. Small Mount.
5. Kitchary.
6. Ponnoor.
7. Pulicat.
8. Ootramalloor.
9. Covelong.
10. Chingleput.
11. Wallahjabad.
12. Periapollium.
13. Tripassore.
14. Trichoor.

PRINCIPAL MAHOMEDAN RELIGIOUS EDIFICES.

Conjeveram.—Ahmed Howlea.
Trivatore.—Peer Pylivan.
Palaveram.—Buddoo Syeed.
Covelong.—Thairna Niensaree.

The principal Hindoo religious edifices are given in th accompanying tabular form :

Principal Hindoo Temples in the Madras District.

Taluq.	Name of Villages.	Name of Temple.	Sect.	Chief feast annually or monthly.	REMARKS.
Chingleput	Terookyhe Coondrum.	Vadagheeree Eswarar	Shiva		
Do.	Mahabalipooram	Tholusayeeua Peroomal	Vishnoo		
Do.	Singapermal Covil	Singapermal	Do		
Do.	Tiroopooroor	Poroorur	Shiva		
Do.	Chingleput	Codundaperoomal	Vishnoo		
Do.	Nathum	Kylawsanader	Shiva		
Do.	Terookatchoor	Amoorda Deeyagor	Do		
Do.	Annoor	Vada Narraina Peroomal	Vishnoo		
Do.	Vulleepoorum	Audecasava Peroomal	Do		
Conjeveram	Conjeveram	Stree Davaraja Peroomal	Do		
Do.	Do.	Yagambra Eswarar	Shiva		
Do.	Streeperamadoor	Stree Bascharloo	Vishnoo		
Do.	Tinnanore	Budrayee Peroomal	Do		
Do.	Wallajabad	Narasinga Peroomal	Do		
Madranticum	Madranticum	Codunda Ramasawmy	Do		
Do.	Teroopacoodul	Vurdarajah	Do		
Do.	Viahwoor	Durmapooree Esooarar	Shiva		
Do.	Do.	Venketasa Peroomal	Vishnoo		
Ponnaree	Periapollium	Bowany Ummaul	Shiva		
Do.	Ponnary	Curry Kistna Peroomal	Vishnoo		
Trivallur	Trivallur	Stree Veeraragava Peroomal	Do		
Sydapet	Poonamallee	Putcha Peroomal	Do		
Do.	Trivatoor	Deeyaga Rayer	Shiva		
Do.	Teroonagheeree	Runganader	Vishnoo		
	Mylapoor	Appersawmy	Shiva		
	Do.	Cabala Eswarar	Do		
	Do.	Audeeossana Permal	Vishnoo		

(To be continued.)

ART. IX.—*Introductory Remarks** *to a Course of Lectures on Diseases of the Eye,—Session* 1865-66. By GEORGE SMITH, M.D., Principal of the Medical College, Professor of Ophthalmology, and Superintendent of the Eye Infirmary.

THE place which the subject of Ophthalmic Medicine and Surgery occupies in the curricula of the senior and second departments of the College, as well as the advanced position it holds in the University Examinations for Degrees in Medicine, have not been assigned to it without good and valid reasons. Before successfully prosecuting the study of the diseased conditions of the organ of vision, it is necessary that you should have mastered the general principles of medical science. You have already studied the all-important subjects of Medicine and Surgery; you are, or ought to be tolerably conversant both with the theory and practice of these sciences, and, therefore, you are fittingly prepared to accompany me in the consideration of the subject which is to engage our attention here.

For, permit me to remark, ophthalmology is not a peculiar subject governed by laws of its own, which constitute it a separate science, but rather is it to be regarded as a carefully and successfully tended plot of the great field of medical science, enclosed by the same fences, irrigated by the same streams, and cultivated on the same principles. It is of importance that this fact should be distinctly recognized.

In the necessary and convenient sub-division of medical science into distinct branches, medical men have, perhaps, too frequently handed over certain departments to the cultivation of "specialists", by which term are meant medical men who have devoted themselves exclusively to the study and practice of special departments of medicine or of surgery. Now, I think that this is a mistake on the part of the profession, however great a convenience it may be, for it leads, somehow or other to the impression, that the diseases and derangements of certain organs, as of the eye for example, can only be treated safely and scientifically by those, who have made the affected organ the object of particular study :

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* These remarks have been slightly added to since the lecture was delivered.

it being carelessly taken for granted, that the ordinary principles of medical and surgical science are not altogether applicable to these special fields of professional experience. When such views as these are carried to their legitimate conclusions, it follows, that the practitioner, voluntarily abandoning the study of diseases of the eye, relinquishes one of the most valuable and practical of the many fields of corroborative experience, and that the "specialist," overlooking those improvements which time effects in the common art and science, is apt to take it for granted that his science has principles and laws, which separate it from the great and more general field of medical and surgical experience. Whilst, therefore, recognizing, not only the convenience, but also the necessity of dealing with ophthalmology as a separate subject of study, I would at the same time impress upon you, as well as upon myself the principle, that it is the duty of every medical man to make himself conversant with the diseases and derangements of the organ of vision, and that it is the duty of every oculist to be thoroughly acquainted with the laws and progress of general medicine.

That this view is not a singular one, may be shewn by reference to distinguished authority. Dr. Jacob, in the preface to his well-known "Treatise on the Inflammations of the Eye Ball,"—a book, by the way, which I recommend you all to read carefully,—remarks as follows:—" It may not be prudent to say so, but I cannot refrain from observing that the more diseases of the eye have been engrossed by persons laying claim to their special treatment, the less have they partaken of the general improvement which time has effected in medicine and surgery. It cannot, I think, be denied that physicians and surgeons having neglected the subject from a belief that it was under the particular consideration of others, became less familiar with it; and now, when they would resume it, are less competent to do justice to its merits. I know that they will not admit the truth of this observation, and that many of them will consider it unjust; but I venture to make it, because I believe that the sooner its correctness is established, the sooner will the defect it indicates be repaired."

In my lectures I shall have constant occasion to remind you of the general laws of morbid action, illustrating many of them by examples selected from hospital experience, and tracing morbid processes from their commencement to their termination in health, or in further changes and results. The eye affords special facilities for these studies, as well as for the study of the influence possessed by therapeutic agents in modifying or arresting the phenomena of diseased action, for it is evident that no where else in the human body have we an organ so complex in structure, which is so entirely patent to our study as the eye. Regarding the study of diseases of the eye from this point of view, Dr. West* makes the following suggestive remarks:—"It has been recommended by some most fitted to give advice, that the student of medicine should begin with the diseases of the eye, since, through its transparent coats, as through a glass, the various processes of disease and recovery may be seen transacted, and 'many of the little wonderful details in the nature of morbid processes may be learned, which, but for the observation of them in the eye, would not have been known at all.' The ophthalmic wards of an hospital must, indeed, be re-visited at a later period for the sake of the special knowledge to be obtained there; but they may well be visited at first for the elementary teaching which they afford."

The *cornea* is a window, through which, with the aid of the ophthalmoscope, the greater portion of the interior of the organ may be satisfactorily explored, and morbid action detected even in its earlier stages, whilst no inconsiderable portion of the external surface of the eye-ball lies under our direct and easy observation. The conjunctiva, cornea, and much of the sclerotic are before our eyes, and morbid changes in these structures are early and easily recognized. Of internal structures, none can be more easily and satisfactorily examined than the *iris*. Knowing, as we do, the natural color, lustre, structure and mobility of the iris in health, from the fact that it is clearly visible through the transparent cornea as a pendant vail floating in a transparent fluid, we can, at once, and with facility detect the presence and effects of inflammatory action in all the visible parts of the organ; such as, changes in lustre, color, structure, and function; the progress and exudations of the disease; the degenerations and changes of tissue; the implications of continuous and contiguous structures; the effects of nature and art in arresting and curing disease, with or without impairment of function, as well as the final results and sequelæ of morbid action. The pathological changes which in other tissues must often be taken for granted, are all more or less distinctly visible to the observer of ophthalmic disease; their progress may be watched from day to day, and the success or failure of treatment may be accurately appreciated by all.

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* Vide *Medical Times and Gazette*, October 28, 1865.

Again, there is no mucous membrane whose morbid alterations can be more closely studied than the *conjunctiva*, and the observations thus made can be mentally transferred to similar morbid states in other membranes of the same class. In the conjunctiva, we see what mean the terms anæmia, hyperæmia, inflammations, (acute, sub-acute, chronic, specific,) atrophy, hypertrophy, &c. These pathological conditions become, as it were, visible entities, whose origin, progress, and results may be distinctly recognized. Where, again, can the changes in fibrous textures induced by inflammation or strumous action be seen, but in the fibrous tunics of the eye, or the paralysis of muscular movement under inflammatory action, but in the iris, or the morbid changes of nervous tissue, but in the optic nerve and retina; where can we see various forms of degeneration of tissue so plainly as in the cornea and lens; where can we see the actual absorption of pus, blood, and exudates, but from the iris and anterior chamber; where can the process of atrophy be detected more accurately than in the choroid, or the effects of pressure more decidedly illustrated than in the anæmic and anæsthetic retina destroyed by glaucoma? Where can we see therapeutic action more satisfactorily than when studying the action of atropine and of mercury in iritis; and where can we see a greater variety of excito-motor and excito-secretory acts than in connection with the various morbid states of the eye, the result of direct or reflex derangement? The behaviour of wounds of the cornea, as after extraction, illustrates every variety of adhesion, and testifies to the influence exerted on the repair of tissue of such causes as habits, temperament, climate, diet, treatment, and epidemic influence. Where can embolus be seen but in the retinal arteries, and where can obliterated arteries, varicose veins, and specific exudations be more clearly recognized than in the delicate structure of the retina?

Then again, in studying ophthalmology, we learn to appreciate the wonderful sympathy which the eye maintains with the system as a whole, as well as with individual organs of that system. Sympathy with general diseases such as measles, small pox, syphilis, struma, and other dyscrasias; sympathy with special affections of the brain, spinal chord, lungs, heart, kidneys, uterus, and organs of digestion.

In no other organ can the accuracy or inaccuracy of diagnosis and prognosis, as well as the success or failure of treatment, be so distinctly appreciated. In no other organ can the natural history of disease be more readily studied, especially in India, where, from sheer apathy and neglect, many diseases are allowed to run their course unaffected by medical treatment. Many other examples and considerations might be added, but those adduced will suffice to convince you of the importance of the study of ophthalmology, not only as it bears upon the treatment of the diseases of the organ implicated, but also as it serves to illustrate and facilitate the study of general disease.

Many, who would otherwise gladly study ophthalmology, are discouraged at the outset, in consequence of the vexatious multitude of details and divisions of the subject so pompously paraded, and, despairing of mastering the nosological minutiæ and pedantic nomenclature, turn aside to studies in which simple truths are conveyed in simple terms. But ophthalmology is not to blame for the faults of its zealous cultivators, and it shall be my aim, whilst making you familiar with all necessary nomenclature, to treat every subject which comes before us in a plain, simple style, as an extension, in short, of those studies, with which you are already familiar. At the same time, I would distinctly impress upon you my deep conviction of the value of *names*, for I agree with Dr. Laycock in maintaining that, "*in a name rightly invented is comprised our knowledge of the thing named.*" As professional knowledge increases, so will our vocabulary of names be extended. New names will appear, old names will change, many terms will become obsolete; were it otherwise, there would be good reason to suspect that medicine alone, of all the sciences, had ceased to grow. The terminology of sciences, judging from their present rate of progress, must be expected to undergo change every ten or fifteen years. We must, in fact, be students all our lives. We begin our scientific career by thinking we know every thing; soon the delusion is detected, and we then make sure we know nothing; experience brings a third and more sensible stage in which we begin systematically, carefully, and observingly to lay for ourselves the foundation of real and useful knowledge. "*By pains and patience the mulberry leaf becomes satin,*"—so says an Eastern proverb.

There are difficulties, however, in ophthalmology which depend, not upon words but upon things. I allude more especially to those subjects embracing the derangements of function of the dioptric media of the eye, which have of late called forth the earnest and successful labors of the mathematical minds of England and of the Continent. To the practical results of the discoveries made in this field I intend to limit your attention. I have, however, one remark in connection therewith to make to students of the senior department, and it is this, that medical science now-a-days requires for its successful cultivation a preliminary general education of a high and complete kind. A high professional education should be the *complement* not the *substitute* of a liberal general education.

In our arrangements for study, Clinical instruction at the Eye Infirmary will occupy a prominent and most important position. A formal course of lectures delivered here in the Medical College is necessary, and cannot be dispensed with, but practical acquaintance with disease can be gained neither from books, nor from diagrams, nor from lectures, but from actual living examples of disease. In harmony, then, with the practice of other Clinical teachers of the College, our attendance at the Eye Infirmary will be improved by daily Clinical instruction; every case, as far as may be practicable and profitable, being brought under review. Gather up carefully and faithfully every crumb of instruction at these Clinical conversations. Dr. Latham has well and suggestively said that, *in hospitals there is always knowledge running to waste for want of some one to gather it.* If it is necessary, as I think it is, that you should carefully take full notes of my formal lectures here, it will be still more necessary that you should carry with you your note books to hospital, so that you may jot down and make your own, not only the casual remarks which fall from the teacher's lips, or what comes under your notice in the progress and treatment of disease, but also that you may record the simplest details of management and manipulation, for no detail of this kind is so insignificant that it may not some day be of use to you in actual practice. Remember that every case of disease which comes under your notice is a lecture, not given by a fallible teacher, but by Nature, the infallible teacher of all, whether professor or student.

In the Eye Infirmary, at which all of you, at one time or other, will have to do duty, you will learn as students not only to make yourselves familiar with the various diseases, derangements, and injuries of the organ of vision, but also with the contingent duties of the dispensary and operating room. Patients will be assigned to your care, and I advise you to keep Clinical reports of the more interesting cases which fall under your observation. I require your regular attendance, your careful and intelligent attention, your presence at all the operations, and your considerate and kind intercourse with all the sufferers, with whom you may be brought in contact. Remember, also, what Bacon says—"*he that questioneth much shall learn much;*" let that questioning, however, not be confined to teachers or to books, but let it extend to Nature herself, which, when rightly interrogated, rarely fails to afford, sooner or later, a satisfactory reply.

In all probability the graver operations will secure your ready interest and careful observation; but it is possible that the more simple operations and ordinary manipulations of every-day practice may appear to you so common-place and free from difficulty, that you need make no effort to master them, from an impression that they may be undertaken at any time without special practice. This, depend upon it, you will find to be a great mistake. Many a student falls into the mistake of considering an operation which he sees performed as easy of execution, forgetting entirely that what appears to be so easy is only easy to the practised and experienced hand. Many a student, who can describe most accurately every great operation in ophthalmic surgery, could not, if his life depended upon it, evert an upper eyelid, pass a probe into the nasal duct, open the eye of a refractory child, or remove a speck of iron from the surface of the cornea.

In the Eye Infirmary will be found, at present,* European, East Indian, and Native patients, and this will afford ample field for the study of these classes as subjects of ocular disease. Each class has its mental, physical, physiological and pathological peculiarities which deserve close attention and study, if you aspire to the merit of being careful observers and practitioners. Nor are these mere curiosities of Medical experience, but rather points of essential importance, influencing, as they do not only the whole natural history of disease, but also the principles and details of treatment. Mentally and physically, the native, regarded as the subject of disease, is a very different patient from the European, and this difference must be intelligently recognized, if you would not be misled by names, but be guided by entities.*

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* European patients will soon be removed to special wards in the General Hospital.

You will observe that the former color of the Infirmary wards was very dark, but that I have endeavoured to substitute for it a wash, approaching in color to a light French grey.

The proper shade of color of the walls of ophthalmic wards is a point of practical importance. It is evident that the piercing glare of polished white walls is too severe a trial for eyes suffering from disease, consequently it becomes necessary to subdue this glare and brightness, so as to avoid increasing the intolerance of light which affects photophobic eyes. On the other hand, however, it is necessary to remember that light, no less than air is necessary for patients, that light is the natural stimulus of the eye, and that confinement to wards with dark-colored walls acts prejudicial, not only to the eyes but also to the health of patients, making the former more sensitive to light, and the latter anæmic, more especially if the subjects be Europeans. It should be borne in mind that but few ophthalmic cases are intensely intolerant of light, and these can be protected, either by bed screens, by eye-shades, or by confinement to a special ward, the majority of cases being of such a kind, that moderate protection from light and glare is alone required; black-washed wards do well enough in the day-time, but early in the evening, when the white or grey-washed ward is still light and cheerful, they become dark, gloomy, and depressing to the spirits of the patients. They are, moreover, lit up with difficulty, and are generally filled with mosquitoes. Residence in such a ward for one month will infallibly induce catarrhal ophthalmia and *hospital anæmia* in an European, however well he may be fed, and however carefully we may insist upon his taking exercise in the open air.

The floors of the wards should have a subdued and uniform color. The dull red brick floor, enlivened with glaring white bands, is, perhaps, the most trying assortment of light and shade for a diseased eye which could be conceived. Screens are useful, but are apt to interfere with ventilation. Screens fixed to the beds are useful in some cases, but, upon the whole, moveable screens are to be preferred. Whatever the arrangements may be, they should be such as in no way interfere with the free perflation of air.

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* To avoid repetition, I would here refer my readers to remarks in the xviith number of this Journal, vide pages 16, 17, and 18.

The text-book* which has been appointed for your guidance is, perhaps, the best which could have been selected; but, in common with all purely English text-books, its details are not always suited to the peculiarities of Indian practice. The Englishman in his own country is a different man constitutionally from the Englishman long resident in India, consequently the practice which is suitable to the former, requires modification, before it can be made applicable to the latter. Still more must that practice be modified when we have to deal with East Indian and Native patients. In many of our patients we have to treat the destructive processes of inflammation, not by venæsection, leeches, purgatives and other depressants, but by tiding the constitution over the dangers with good food, stimulants, and tonics. In the Eye Infirmary you will never be called upon to bleed a patient, and very rarely to apply leeches.

In the case of the poorer natives, who constitute the majority of our patients, you will find that, as far as practicable, their ophthalmic diseases are treated without depressing remedies, and that when mercury is given its administration is carefully limited, and precautions are taken to repair, as soon as possible, the injury to the blood induced by its specific action. " He fed fevers," was Graves's motto; " we feed ophthalmic inflammations" must be ours, if we duly consider the feeble and broken-down constitutions in which so many of these inflammations occur. In accordance with these principles you will not be astonished to find that, in the case of the native patients more especially, alcohol is employed freely in the form of arrack, not only for its physiological action as a nervine stimulant, and for its obvious value as a nutritive agent, but also for its therapeutic value. When alcohol in this form is given to native patients suffering from diseased action in debilitated frames, it is surprising how rapidly and remarkably the whole system responds to the stimulus, and how speedily the character and type of the morbid processes undergo a change. I use this valuable therapeutic agent sparingly in the treatment of acute ocular disease in a comparatively healthy system, not because I disapprove of the administration of alcohol in such circumstances, but because we have, in the European and Native diet tables,* sufficient means at our disposal towards supporting, in an efficient and legitimate way, the general system under the inroads of acute disease. But in the treatment of many chronic affections of the eye in broken-down constitutions, you will find that stimulants are employed freely ; the object being, by small and repeated doses to influence for good the nervous system generally, to stimulate the circulation, and improve the organs of digestion. In asthenic inflammations and ulcerations; in chronic unhealthy ophthalmias ; in cases of traumatic injury of the cornea, threatening death of tissue ; before and after the operations of extraction and of scooping out the lens ; in old patients with feeble digestion and weak pulse, and in patients who have been more or less habituated to stimuli, the careful and continued administration of alcohol *in divided doses*, proves of incalculable value. The principle of giving the stimulus in small and repeated doses should not be overlooked. Every approach to intoxication must be studiously avoided, as subversive of the true therapeutic principle upon which alcohol should be administered in the treatment of disease.

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* The text-book is "The Principles and Practice of Ophthalmic Medicine and Surgery by T. Wharton Jones, F.R.S., &c." Dixon on Diseases of the Eye may be substituted for it.

In another point will the details of your text books tend unintentionally to mislead you. I mean as regards the descriptions given of the subjective symptoms of disease. Among the poor and uneducated natives, who form so large a proportion of our patients, you will find that the complaints of uneasiness, tenderness, discomfort, pain, &c., such as are detailed in your text books as symptomatic of certain states of ocular disease, are not true to actual life, being considerably exaggerated and overdrawn. The explanation being, that the nerves of sensation in the lower class of natives are less impressible than in the case of the European; the sensations of the native, in other words, are blunter, and consequently diseases, which cause inexpressible suffering to the European, occasion to the native only a moderate degree of uneasiness and discomfort. As, however, the nervous system of the native becomes more impressible from education and civilization, so

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* Vide Appendix No. 2.

“pari passu” will his sensibility to pain and suffering increa
This opens up an interesting field of study to you, not o
as students of ophthalmology, but as philosophical medi
practitioners. In the most highly educated patients dow
the most ignorant subjects of morbid action, disease must
expected to exhibit *polymorphism*, that is, multitudinous sha
of modification ; so much so, that in many essential featu
the extremities of the chain will differ, materially, the
from the other.

I must also call your attention to another point
practical interest, which is, that you must be prepared to f
from your Clinical studies that many diseases of the
are far less distinctly and sharply defined in nature than th
are in your text books and syllabus. Take, for example, t
great class of inflammations of the various tissues of the e
The morbid process, at its commencement, is frequent
limited strictly to one tissue, but in its progress it extends
continuous or contiguous structures, so that the disease, whi
at first was limited, becomes more or less complicated.
pure conjunctivitis, keratitis, sclerotitis, or iritis, for examp
is only seen in the initial stages of those diseases; afte
time, the *conjunctivitis* becomes complicated with sclerot
and keratitis, the *sclerotitis* extends to the iris, and the p
iritis ends by implicating the choroid, ciliary body,
retina.

Again, there are diseases sharply defined by authors,
treated of under separate heads, such as simple, catarr
and purulent ophthalmias, which, in certain cases, you
find to be, not separate entities, but successive stages of
disease. Nature, in short, refuses to be shackled by
nosological systems, just as she refuses to be tied by
natural history systems. Her great types of disease
readily discerned, and their specific characters may be ea
defined, but intermediate between these typical forms,
connecting the one with the other, are to be found m
and most complex shades of morbid action, whose pre
characteristics pass all correct definition. Our meth
divisions, and arrangements look plausible and accurate,
practically, you will find that the detailed distinctions
more characteristic of the initial than of the advanced st
of morbid action. Again, you will find many diseases of
eye which defy strict nosological arrangement, in consequ
of alteration and aggravation of symptoms, and the occurr

of complications, the result of that terrible malpraxis which is the too frequent concomitant of native treatment.

It is melancholy indeed to be the daily witness of eyes destroyed, not by disease, but by remedies applied for its cure, remedies whose effect is to leave the eye much more injured than had it been submitted to the uncontrolled action of the original morbid process. Experience in such wretched cases will soon lead you to this conclusion, that it is much easier and more successful to treat disease, than to manage and mitigate the results of bad, unscientific, and barbarous treatment. The native methods of treating diseases of the eye are rough and barbarous in the extreme; the simplest and most manageable forms of ophthalmia too frequently, under such irrational handling, becoming unmanageable, and ending in more or less complete destruction of the organ of vision.

There are difficulties too in the way of ascertaining from your native patients the history of individual cases of disease; which difficulties do not generally meet us in European practice. Few natives of the poorer classes can give their age with accuracy, or can indicate, within reasonable limits, the time when the disease under observation commenced. Fewer still can give any clear statement of the different stages of the malady or even of the most likely cause of it. In a case of cataract, for example, were the patient an European of the educated class, he would be able to give you a correct outline of the course of the morbid action; he would be able to specify the exact date when impairment of vision set in; he would tell whether that impairment first affected the right or the left eye; he would be able to assure you that the progress of the malady had or had not been accompanied with pain, and he would be able to give the day on which he first noticed that useful vision had ceased in one or other eye. With a native all this is otherwise. He often cannot tell you his own age, and, though he can indicate pretty accurately the day when he could no longer earn his daily bread, yet all the antecedent experience of gradually impairing vision seems to have totally escaped his observation. This arises from no wish to deceive or to withhold information, but from sheer want of observation and from apathy. He was able to work up to a certain time, and that time is, to him, the date of the commencement of the disease.

We shall see, I have no doubt in the course of our Clinical experience, two classes of very miserable and hopeless cases, arises from opacities of the cornea, the results of which, in their initial stages, were almost all remed

To those of you whose destination is the Medical nate Service, the careful study of occasional cases of *ing* will prove of great advantage. So long as the granting one anna batta daily to out-patients was these cases presented themselves in considerable Now, since the abolition of the donation, fewer ca but still examples are by no means infrequent. Care vation alone can enable you to distinguish real from diseases.

In conclusion, I would warn you against fee couraged at the difficulties experienced in dete morbid changes, indicated by me as having taken pl of the tissues of the eye. Remember that your ey education and practice before they can *see* objec kind. It is only after considerable practice that yo in the native eye, the changes of color, lustre and which indicate the existence of iritis, for example. in fact, learn to see by knowing what to look for. morbid changes, which are at first invisible, becon time, so distinct and easily detected, that you will wo it ever could have happened that you overlooked th

Before concluding these introductory remarks to t permit me to call your attention to the table before yo embodies the results of the experience of the Eye

TABLE OF DIETS FOR HOSPITALS OF NATIVE SICK.

Articles Comprising the different Heads of Diets for a Day.

AVOIRDUPOIS WEIGHT.

Spoon.	Milk.	Low.	Full.
Sago 4 oz.	Bread 12 oz.	Mutton in broth 6 oz.	Mutton for Curry 8 oz.
Sugar 2 ,,	or,	Bread 12 ,,	Rice* 8 ,,
Milk 6 ,,	Rice 12 ,,	Butter 1 ,,	Curry Powder ¼ ,,
Rice. For Conjee 2 ,,	Milk 2 pints.	Onions 1 ,,	Country Vegetables 4 ,,
Salt. Water 2 drs.	Sugar 2 oz.	Barley ¼ ,,	Hopper† No. 6
	Rice For Conjee 2 ,,	Flour ½ ,,	Bread 8 oz.
	Salt. Water 2 drs.	Salt. 1 ,,	Butter 1 ,,
			Salt 1 ,,

* Or Rice 1 lb. omitting the Bread.

† Hoppers to weigh 2 oz. each when cooked.

The weight of Meat in the above diets to be exclusive of bones.

In cases in which the Medical Officer considers it necessary, Tea ¼ oz. or Coffee 1½ oz. per diem may be ordered with any of the above diets; when given with Low or Full, Sugar 1½ oz. and Milk 6 oz. will also be allowed.

ART. X.—*Typhoid Remittent Fever at Bangalore.* Report by Deputy Inspector-General of Hospitals E. BALFOUR.

(*Communicated by the Principal Inspector-General, Medical Department.*)

No. 1775.

OFFICE OF DEPUTY INSPECTOR-GENERAL OF HOSPITALS,
MYSORE DIVISION.

BANGALORE, 28*th September* 1865.

TO THE SECRETARY TO THE
PRINCIPAL INSPECTOR-GENERAL,
Medical Department, Madras.

SIR,—I have had the honor of reporting to the Principal Inspector-General, Medical Department, the occurrence, in Bangalore, of fever of a severe form.

2. There has been a considerable prevalence of intermittent fever; but the disease to which I have alluded in my communication has been of a low remittent form, rapidly running into a typhoid state.* While Inspector-General W. Mackenzie, C.B. and M.D., was at Bangalore on other duty, I took the opportunity of showing cases in the Cantonment Civil Hospital and amongst the followers of the Royal Artillery; and, as now in the orders on my Diary of the 28th ultimo, he then suggested the transmission of a report on this disease, I had already requested from each of the Medical Officers serving here a report on its character, and I beg to enclose their replies.

3. It will be observed from these replies that a feature of this ailment has been the rapidity with which a state of depression and even of collapse supervened. Indeed, the rapid prostration has been one of the most marked symptoms in all

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* The Medical Officers in their reports designate the fever as under:—

Surgeon Major M. Rogers.—"The character of the fever * * * has been of a low remittent type, rapidly running into a typhoid state."

Brevet Surgeon T. Lowe.—"The prevailing type of the disease has been typhoid, * * the fever has been a bilious remittent fever of severe character and typhoid form."

Surgeon C. C. Rutherford.—"Typhoid fever."

Assistant Surgeon W. O'Halloran.—"I have no hesitation in pronouncing the disease genuine typhoid fever."

Assistant Surgeon W. Farquhar, M. D.—"A malarious fever, in the early cases scarcely distinguishable from intermittent fever. In other cases taking on a remittent or a continued character; but in all cases having strong proclivity, when uncontrolled, to run on to a typhoid state."

Assistant Surgeon Henderson, M. D.—"The fever now prevalent in this place I consider to be a form of bilious remittent of a low adynamic type."

cases, and has called for a liberal use of good food and stimulants.

4. In looking through the Topographical report on Mysore, the epidemic of this year more resembles the ailment described at page 73 as having occurred in Bangalore in 1820-21, than any other noticed in that Report. But, besides that the Report at page 73 mentions the disease of 1820-21 as having been an intermittent, the record is too brief to admit of a close comparison being now instituted. In the epidemic of this year, however, the jaundiced conjunctiva, the gastric irritability, the vacant expression of the countenance, and the nauseous odour from the body, alluded to there, have been present; but, in very many of this year's cases diarrhœa has been present; there has been delirium, and a tendency to local congestions and inflammations, none of which are noticed as having occurred in the ailment of 1820-21. This tendency to congestion and inflammatory action, in one or more internal organs, has been observed with a frequency which would seem to mark it as a characteristic of the epidemic.* Also, although remittent fevers of a severe form are of common occurrence in many parts of the Mysore country, and the cases of severe intermittent which are noticed as having occurred in 1820-21 seem to have resulted from exposure to a malarious atmosphere in the district, in this year the epidemic of fever has prevailed amongst classes of the Bangalore community permanently dwelling in the city. On these points the epidemic of this year seems to differ from the disease described in the Topographical report as having occurred in 1820-21, and as I do not remember to have observed noticed by any authority the occurrence in this town of a bilious remittent fever of a typhoid form as an epidemic disease, it may be useful to note the features of the malady which the Medical officers have observed; my own observation having been only since the beginning of June when I came to serve in this division.

A fever appeared at Cuddapah in 1825, and, shortly afterwards, was described by Assistant Surgeon W. Geddes (*Additional Appendix, dated Cuddapah* 12*th March* 1827, *pages* 128 *to* 135.) He named it a "typhoid remittent" (28). In many features it resembled the Bangalore fever of 1865. In the Cuddapah fever there was an affection of the sensorium, not seen in the Seringapatam fever of 1824-25, (p. 128); delirium: muttering delirium; rousing when spoken to; hurried speaking; a vacant stare, a feverish anxiety to anticipate our wants: wild eye (129): dark red eye (130 and 132): deeply jaundiced eyes and suffused with red vessels: tongue nothing unusual (129): parched tongue (131): inclination to wander (132): pulse weak (131): looseness, fœtid stools: no overflow of bile (132); urine turmeric colored; and sudden failure of *vis vitæ* were the prominent symptoms.

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* Assistant Surgeon W. Farquhar, M. D., thus notices this peculiarity:—"More or less engorgement, turgescence or inflammatory condition of one or more internal organs, the liver being, in even the mildest cases, almost invariably congested. To my mind, a striking character of the disease is the want of uniformity as to the organs implicated, it appearing as if the various organs were attacked indiscriminately; and, in fact, one after another when the disease is unchecked."

5. In few of the cases here have there been other than very brief and irregular remissions. Instances have occurred where the skin has been hot, but, in general, the warmth of the surface of the body has been but little increased, and though, as before observed, the rapidity with which depression set in, the great prostration and prolonged convalescence have been features throughout, it was in the cases with little heat of skin that the emaciation, prostration, and tendency to collapse were the most marked. With some of the sick there have been profuse wasting perspirations.

The look of the sick has attracted the attention of all the Medical officers; there was a drunken or vacant expression in their faces. There has been much delirium, with a disposition to mutter or talk, and an inclination to wander about in a half-conscious state, the patients staggering in their walk. In others of the sick, there has been much mental obtuseness, or stupor, or a semi-comatose state, but sensible when roused, almost up to the moment of dissolution. In some cases twitchings of the muscles of the extremities have been noticed. The pulse has been generally small and feeble. There has been much troublesome lumbar pain, malaise, anxiety, distress, and restlessness. In one case, of a native, the whole skin was of a yellow color. The eyes of most of the sick have been of a deep gamboge yellow color, there has been much nausea and gastric irritability with frequent bilious vomiting.

A tendency to diarrhœa has prevailed, the patient passing copious gamboge yellow thin stools; and there has been a case in the Sappers, with large expectoration deeply tinged with bile. The urine, in cases, scanty at first and of a deep yellow color, as the disease mitigated, became very abundant, often with an offensive fœtid odour or with a strong ammoniacal smell and a color even of a greenish hue. The tongue, in the severe cases has been dry and leathery, with sordes rapidly forming on the teeth; or the tongue has been laden with a greenish yellow fur. The thirst has been intense; and there have been tenderness and distension of the abdomen.

I have not myself observed spots on the body, but Assistant Surgeon W. O'Halloran, Royal Artillery, mentions that in two of the cases treated in that hospital petechiæ were observed, and in one case "the lower part of the abdomen was covered with sudamina." It has been the parotid glands, the lungs, the liver, and the bowels which have taken on inflammatory action. Parotitis has been frequent, running to suppuration with great rapidity: so early even in some cases as the second or third day, the throat, the face, and the head swelling into an unshapely mass: and the abscess bursting at the angle of the jaw, or throat, or the outer ear, discharging a very offensive pus in large quantities. Cases of bronchitis have occurred, and severe attacks of pneumonia; diarrhœa has been frequent, and attacks of dysentery have marked the course of this fever.

In two cases, where the liver was affected, amongst the Sapper Battalion, abscesses were reported to have burst, and the pus passed, in the one case, through the lungs, and in the other through the bowels. In a case of a European in the Garrison Hospital the lung was found filled with pus.

6. Owing to the variety of the internal organs implicated, and adaptations needed to meet the individual cases, it is not easy to give a brief summary of the treatment followed. Only four of the officers have noticed in their reports the treatment they pursued, but it may be described generally as having in all instances been dictated by the peculiarities of the case, while supporting the strength by food and stimulants. With the cases which occurred amongst the Royal Artillery followers, the Chlorate of Potash, Acid. Nitric., Dilut., Acid. Hydrocyan. Dilut., Bark, Quinine, and Spirit. Ammoniæ Aromaticus have been usefully employed; and arrack and food given, and careful watching exercised for the remission in order to administer the quinine. Turpentine liniments have been used, and when delirium

occurred much good was obtained by shaving the head and by the application of blisters to the nape of the neck. The skin was sponged with warm water. Only 6 deaths have occurred out of 79 cases, but the free fresh air has been a powerful agent in their recovery.

Brevet Surgeon Lowe, in treating the Madras Sappers from the neighbourhood of the market, mentions that he found a great intolerance of quinine in every case, and he adds, "I feel assured in some cases its administration was attended by actual harm; when a paroxysm came on I omitted the quinine with beneficial effect; until there was a good action of the abdominal organs, the quinine was worse than useless. I found small emulgent doses of mercury with sodorifics, diaphoretics, and aloetic purgatives most useful. While the adynæmia was combated by the constant exhibition of wine, brandy, æther, ammonia, beef tea, &c., &c., and hot bottles to the feet;—special symptoms were met by special remedies."

Surgeon Rutherford, H. M. 18th Hussars, writing of the 18th Hussars, who are located on the south-west of the Ulsoor Lake and his hospital due south of the lake, says that "the treatment adopted in all cases has been the free use of stimulants in the form of brandy, portwine, and occasionally bottled porter; light nourishing food as beef tea and strong chicken broth. The sesqui-carbonate of ammonia, occasionally combined with disulphate of quinine in bitter infusion, has invariably been given, and the system generally supported in every way." "Nape of the neck has been freely blistered, and the raw surface sprinkled with quinine."

Assistant Surgeon Henderson, M.D., H. M. 33rd Regiment, whose cases also chiefly came from near the market, has found that "the treatment of this fever requires the very greatest care and attention, as might be supposed when the cause is somewhat obscure and when the stomach is so irritable and so little tolerant of medicine or food, moderation in the use of remedies, constant watchfulness and attention to local complications are peculiarly necessary. I have found that after clearing out the primæ viæ, a gentle stimulant and nourishing plan not proceeded in blindly, but with due and careful regard for the tolerance of the remedy or the nourishment, for the period and time of its administration, and for its effects, has succeeded best; the low state of the functions of digestion and assimulation require to be kept in mind as well as the low state of the nervous system and body generally. Quinine, so useful in all forms of fever, it is specially necessary to be careful about; its ill-timed or undue administration I have observed to do harm."

Assistant Surgeon W. Farquhar, M.D., Garrison Assistant Surgeon, thus remarks:—"Regarding treatment I should say that the most successful would be that in which each particular case was treated according to the ordinary principles of medicine: where necessary, removing obstructions in particular organs, combating the various symptoms as they arise, vigorously supporting the powers of life, and judiciously exhibiting quinine in quantities varying with noted periodicity in all cases in which there is no known contra-indication to its use."

The native sick treated in the hospital of the Sappers and Miners, and many of those in the Cantonment Civil Hospital were from near neighbourhoods, and it will be observed that their Medical Officers found it necessary to be watchful in administering quinine.

7. I have been of opinion that this fever has been caused by impurities in the drinking water of the community. But, as will be observed by the reports, the Medical Officers who have given their views have attributed its origin to more than one cause, and as this is a point of much importance connected with the sanitary condition of this city, I place their remarks in notes below.[*]

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[*] *Surgeon Major M. Rogers, Garrison Surgeon.*—"The admission into the Garrison Hospital of patients suffering with this disease have been from amongst the dhooly bearers, bullock drivers, &c., who reside in low crowded localities. Some of these came from the neighbourhood of the market, near the open drain which carries off the sewage from the Infantry lines and bazaars."

Brevet Surgeon T. Lowe, Sappers and Miners.—"The site of the Sapper camp is the worst in Bangalore. In either monsoon it is to leeward of immense foci of disease, bazaars, crowded dwellings and square miles of filthy houses, huts and cesspools on one side, and the other drying borders of a huge surface tank; added to this the water of many wells is simply filth. I have examined many specimens with a powerful microscope, and I may state that it is universally unfit for drinking purposes as procured from the wells and tanks, and carried in mussucks. It will be seen that we have earth, air, and water against us,—a combination sufficient to originate and perpetuate any amount of endemic or epidemic disease."

Surgeon Rutherford, H. M. 18th Hussars.—"In no single instance has a patient, on admission to hospital, presented the slightest appearance of this disease, and it has invariably supervened on some other disease as diarrhœa, dysentery, bronchitis, or simple continued fever." * * * "With regard to the hospital, the situation is bad, being considerably lower than the road; the compound is crossed at right angles by a large main sewer which leads direct from the barracks, and conveys all the sewage from thence. In ad-

The town is undoubtedly overcrowded, and overcrowding is ever a cause of fevers of a severe form; but it is to the impure drinking water of this community that I would point as the cause of this disease. Near the Market, in Choolay, amongst the huts of the Artillery followers, near the North-east corner of the old Race Ground, and, latterly, the huts on the west of the Protestant Burial Ground, have been the sites in which the prevalence of this fever has been chiefly noticed. There have been but two cases in the 33rd Regiment Madras Native Infantry, none in the 22nd Regiment Madras Native Infantry, and only one case in Her Majesty's 2-10th Regiment. The ailment has been occurring here since January, though the cases were not at first connected as a series; but it seems to have occurred in its greatest severity amongst the Artillery followers, in the huts near the North-east corner of the old Race Ground, appearing there about the months of March or April, between which time and the beginning of August, 106 deaths are reported to have taken place. The mortality seems to have impressed these people with the belief that the disease was contagious, and there has been reported to have been an unwillingness to attend on the sick. There is no doubt that it would be very undesirable to accumulate in one spot any large number of these cases of fever. Alike as the most advisable mode of treating the sick of the Royal Artillery followers, and to remove them from the vicinity of the European troops, tents were pitched for them at a distance, and about

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dition to this there are several minor drains, which convey sewage from the hospital and empty themselves into the main drain." * * "And I am only able to speak with regard to the unpleasant emanations which arise therefrom, and is the only cause to which I can attribute the frequent occurrence of typhoid fever in this hospital."

Assistant Surgeon W. Farquhar, M.D., *Garrison Assistant Surgeon*.—"I deem it a matter for consideration whether this fever is one *sui generis*, produced by some yet unknown cause; or whether certain atmospheric influences added to conditions affecting localities and individuals, and all acting simultaneously (though always in some degree existing separately) may not have simply modified the better known forms of malarious fever, all of which are liable to occasionally become more or less epidemic."

Assistant Surgeon Henderson, M.D., *33rd Regiment N. I.*—"As to the causes of this fever, it would appear, at first sight, to depend upon or proceed from want of food, or clothes, or shelter, or cleanliness, or air, or other necessary of life; but, on closer observation, it can scarcely be attributed to privation alone, as it has occurred among a population who are not starving or in very impoverished circumstances, and there has been no want of remunerative labor here of late. That it is due to improper diet and to imperfect sanitary conditions I have no doubt."

80 cases have been under treatment in the tents since the beginning of August, frequently shifting the tents, and affording to the sick the freest accession of fresh air.

Latterly, there have been cases admitted from the followers of the A. Battery 14th Brigade and on the South-west of the old Race Ground; but whether these people were amongst the number who were removed from the North-east huts has not been traced. During the month of September, the cases which occurred have been less severe. The character of this epidemic fever has been such as to give rise to the question whether it may not find a permanent place in this city; and it has seemed advisable to submit to the Municipal Board several suggestions, connected with their sanitary care of the town in the matter of supplies of water, food, and pure air, and I attach,* for information, a copy of that communication, as also copies of the previous letters to which it alludes.

8. There is a fact which strongly supports the view taken by others as to this fever having been of atmospheric origin. It is, that all the ailments occurring in general practice have been of an adynamic type. And, though this militates against the opinion which I have formed, I mention it as a point of importance to be known in endeavouring to trace the cause of this epidemic.

The principal source of water-supply for the Artillery followers was a well (there were others near) underneath the North-east Cess Cistern, regarding which the G. O. No. dated has been issued. It was considered the best water of the neighbourhood, and was largely used by the followers, a great portion of whom have fallen ill and many died. The other wells in this city, from which all the poor and many of the well-to-do people obtain their drinking water, urgently need care.

9. As it will be observed that Brevet Surgeon Lowe notices the site of the Sapper camp as the worst in Bangalore, I may mention that the native soldiers of the Sapper Battalion have not yet erected their huts on the site made vacant for them, but have been occupying portions of the lines which, at the end of 1864, the 14th Regiment Native Infantry quitted; the European part of the Sappers only

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* These letters point out several unsanitary conditions, and suggest remedies; but we see no reason to reproduce them here.—ED. *M. Q. J.*

being in the neighbourhood of the locality allotted for the new huts that are to be erected.

It will also be observed that Surgeon Rutherford attributes to the site of his hospital the occurrence of typhoid cases in it, and records his opinion that "the situation of it is not one conducive to the successful treatment of sick Europeans."

I have already, in my diary of 29th October 1864, placed before the Principal Inspector General the opinion which I had then formed regarding the sites occupied by the military in this city, and I noticed then how much they have been surrounded by the civil population. I have again this year been serving in this Division, and the opinion which I had formed in 1864 continues unchanged. Surgeon Rutherford has repeatedly mentioned to me that surgical cases treated in the more northerly men's building of his hospital have not done well, and, with a drain crossing its compound and the Ulsoor Tank on its north, I am of opinion that the site is not one on which a new hospital can be erected with any confidence as to its affording a pure atmosphere for the sick. On this point, my opinion as to the superior advantages of having the European sick treated in the old Race Ground Hospital were submitted to the Sanitary Commission when inspecting here in 1864. As regards the Sapper site, which is as yet unbuilt on by the native soldiers' huts, the opinion which I submitted in 1864 as to the military generally being over-hemmed in by the civil population is very applicable here.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) EDWARD BALFOUR,

Deputy Inspector General,

Acting Deputy Inspector General,

of Hospitals, Hyd. Subsy. Force.

ART. XI.—*Annual Report of the Engineer Establishment, Upper Godavery, for the year* 1865. By Assistant Surgeon J. M. HOUSTON, M.D., in Medical charge Upper Godavery Works.

(Communicated by the Principal Inspector General, Medical Department.)

THIS station has been described in my annual reports for 1861 and 1862, and there is little now to say about it. On the further side of the canal under construction, about half a mile or rather more from the bazaar, four good lines have been erected, each 144 feet in length and 18 feet in width, and divided into compartments 9 feet × 9 feet. These lines are 170 feet apart, and their situation is high and good, but they are half a mile distant from the river, whence only water can be procured, and the locality is too much surrounded by jungle. On this side of the canal, and close to the river and bazaar, there are now eight lines from 100 to 154 feet long and 18 feet wide, divided into compartments 9 feet square; the lines are from 120 to 150 feet apart. The ground on which they are built, like the bazaar itself, is decidedly low, and was under water during the heavy freshes of 1861 and 1863. Four of the lines are very bad and will doubtless soon be removed, the other four are new and good. During the hot weather, cholera prevailed greatly in these lines and in the bazaar, and three very old lines, in which the people insisted on remaining, were destroyed, to check, in some degree, the spread of the disease. The bazaar itself contains about eight short straight streets of varying but considerable width, and running north and south. On the highest part of the river bank, are the writers' houses, running in two or three streets, which are pretty wide and straight. At each end, however, of this part of the station, there has always been a tendency to run up small huts out of all line. Major Haig did everything to put this system down that he could, without interfering with private property, and, since the hot weather of 1864, these situations have been less crowded and offensive, but they have never been healthy, and the cholera committed more ravages there than elsewhere.

On the Lunka, which is high and never under water, there are twelve lines. Two of these are 300 feet long and 20 feet wide; the rest are of the same width, but only 150 feet in length. They are all divided into compartments about 10 feet square, and the lines are 90 feet, at least, apart. Sometimes the coolies decline to live in the lines, and put up, chiefly in the hot weather, temporary huts near their work and near the river. They are apt to run away in hundreds if they are interfered with, so these temporary villages have always been tolerated, though they are always in a filthy state. There are usually two of these encampments on the Lunka, but at this moment there is only one, which contains 80 huts. At the Lime-kiln, which is more than a mile from the bazaar, and higher up the stream, there are four lines; one is 200 feet long, and the others 100; they are all 18 feet wide, and are divided into compartments about 9 feet square. As on the Lunka, these lines are 90 feet apart. Here, also, there is an encampment containing forty huts.

Between the bazaar and the Lime-kiln, but nearest the former, are the workshop lines, built in two regular streets and containing twenty-four houses, but the situation is low and the locality very close to swamp and jungle. The great majority of the people employed in the workshop, however, live close to the writers' lines in Doomagoodiem village. Near the workshop, but on the outside of the flood embankment, is MacLaren's Village, which has existed for two or three years, and is composed of about one hundred and ten huts of all possible sizes and shapes, built on each side of the cart track or road. The jungle is quite close to this encampment. All the huts in it are, of course, the property of those who inhabit them, but this encampment is kept pretty much as Mr. Van Stanern, the Workshop Superintendent, chooses. With the exception of a single well at the workshop, water is got only from the river or the branch of it called the channel, which leaves the river two miles above the station, and, after forming the Lunka already mentioned, re-joins the main stream between the workshop and the writers' lines.

The only out-station of importance now occupied is Gungole, between two and three miles from here. It was occupied in 1862 when the tramway was under construction, but has not been much used since, and the old lines have long ago fallen to pieces. Some new lines were, however, constructed there in 1864, and occasionally occupied by small parties, but it was not till the middle of October 1865, that it became of importance. In that month orders arrived to stop all the works below Gungole, and to make that neighbourhood the site of the Tail Locks, and about 1,000 men were immediately transferred from Penapilly, Gollagoodiem and the other stations of the 3rd Sub-Division, and took up their residence in the Gungole lines, or encamped under trees, or threw up temporary sheds in that situation. There are now seven lines at Gungole, two of which are roofed with corrugated iron. One of the latter is 200 feet long and 24 feet wide, and the other is 15 feet wide and 140 feet long; the compartments of each are 12 feet by 8 feet. The other five lines are each 144 feet long by 19 feet wide; the roof is thatched, and the compartments are nine feet square. The situation is good, but there is too much jungle and the lines are too far from the river, *i. e.*, more than half a mile, but putting them on the river bank, which is here rather low, would be a source of danger during every high fresh. Here, too, the coolies take things in their own hands greatly, and form little encampments of their own near the river. Of the other out-stations I shall say something when I come to the details of the cholera epidemic.

A considerable establishment has been kept up during the year to keep the village, &c., clean; for Doomagoodiem 9 sweepers, 5 toties, 2 bandies and 1 puckali; for the Workshop and MacLaren's Village 1 peon and 4 sweepers; for the Lunka 2 peons, 5 sweepers, 1 toty, and 1 bandy; and for the Lime-kiln, 1 peon, 2 sweepers and 1 toty. There are 14 movable privies in use. These consist of a wooden platform mounted on wheels, placed over a narrow, deep pit. To the platform a frame-work is nailed, and this frame is covered with mats or cloth, so as to conceal the persons using the privy. Three or four holes are cut in the floor, and the sweepers throw earth through these holes into the pit below once a day or oftener; and they wash the floor or platform as often as appears necessary. The plan works well with care, but it breaks down in an epidemic, because the sweepers are panic-stricken, like the rest, after the first day or two. These privies are kept pretty near the streets and lines. To remove them to any distance would defeat their object, and the streets and drains would suffer. The great majority of persons in health don't use the privies but go into the jungle.

The climate is cold for three months, viz., November, December, and January; very hot in April, May, and June; and moderately hot all the rest of the year. The rainfall, for the four months of the monsoon, was only this year about 31 inches, but it is usually somewhat more, *i. e.*, from 36 to 40 inches. It was distributed as follows: June 4·6, July 5·7, August 11·6, September 9·2. There were severe windstorms during the hot weather, but hardly any rain till about April 20th, when several thunderstorms, with some rain, occurred. The navigation did not commence till 2nd July, which is 10 or 15 days later than the usual time. On the 11th June the thermometer was 101°; I doubt whether it was ever higher, but during most of May and June, it stood during the afternoon at about 95°.

II.—The hospital was built in 1861, and was fully described in my report for that year. Some improvements were made in 1864, and noted in last annual report; on the Lunka, however, a nice new hospital has re-placed the shed formerly in use. It occupies a high situation, about a mile from Doomagoodiem Hospital, on the Lunka bank of the channel, and is sufficiently removed from the Coolie lines. It is a thatched building of sun dried brick, and contains a ward 53 feet long by 16 feet wide. The walls are fourteen feet high, and on each side there are four doors but no windows. Round the building there is a verandah 8 feet wide. At the ends the verandahs have been built in so as to form two side rooms each 17 feet by 7 feet, and not communicating with the main ward. One of these has been fitted up as a surgery; the other is chiefly used for obstetric or puerperal cases. At Gungole, an old house, formerly occupied by a Supervisor, is in use as a hospital. It would be well enough suited for the purpose if it were more central in position and in proper repair. The hospitals at Doomagoodiem and on the Lunka are always full of in-patients; but, at Gongole, there are seldom more than one or two in-patients; the coolies there won't, as a rule, remain in hospital, and if any force is employed, they won't even become out-patients. When all the doors are open the Lunka Ward accommodates ten patients. If some of the doors are shut, room can be made for two or three more.

III.—The employment mainly consists of earthwork, *i. e.* digging canal and making embankments, and of masonry and quarrying for the anicut, sluice wall, and lock; there is also, of course, a little wood and iron work done at the workshop. Work is carried on usually from 6. A. M. till noon, and from 2 to 6 P. M. In the hot weather the hours are shorter. Most of the work, however, is now done by contract, and those who work on these terms are, of course, allowed to choose their own hours, when the work is not of such a nature as to require close supervision.

IV.—During the first half of the year the European strength was at least 25, but, when Government determined not to go on with the second barrier, and to confine the works on this barrier to two or three miles, considerable reductions took place as less supervision was required. The European strength is now about 15. One death took place among the Europeans during the year.

The monthly approximate native strength is thus shown :—

MONTHS.	Head Quarters.	Out-stations.	TOTAL.
January...	3,580	928	4,508
February	4,224	1,295	5,519
March	4,917	1,821	6,738
April...	1,877	500	2,377
May	1,811	1,250	3,061
June...	1,847	1,228	3,075
July	1,207	556	1,763
August	904	1,420	2,324
September.	494	546	1,040
October	2,610	0	2,610
November	4,179	0	4,179
December...	3,496	0	3,496

The Monthly Admissions and Deaths from all diseases have been :—

MONTHS.	Head Quarters.		Out-stations.		TOTAL.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
January...	473	8	151	1	624	9
February	524	7	149	1	673	8
March	900	11	160	1	1,060	12
April...	904	215	219	25	1,123	240
May	302	34	121	7	423	41
June	311	6	110	0	421	6
July	228	5	109	1	337	6
August	170	1	78	0	248	1
September	175	0	124	0	299	0
October	221	1	65	0	286	1
November	372	2	234	1	606	3
December	397	2	181	1	578	3

Since October, with the exception of about 200 men, who were encamped for a few weeks on the opposite side of the anicut, to quarry stone and collect material, the only out-station has been Gungole, and, as many of the men employed in cutting the canal, between Doomagoodiem and Gungole, live at the former station, and are consequently treated at the General Hospital, while others, who live in the lines between Doomagoodiem and Gungole, are treated at either, it is difficult, now, to preserve the distinctions of "Head Quarter strength" and "Out-stations strength," as in former reports. Up to October, however, the distinction was easy, as the out-stations were at least ten miles removed from Doomagoodiem, and formed a distinct sub-division, extending over 10 or 12 miles, under the supervision of Lieutenant Roberts, R. E.

V. Fever has always been a principal disease here, as is shown by the following table :

YEARS.	Approximate average strength.	Total admissions for Fever.	Deaths from Fever.
1861	750	1,305	8
1862	2,300	3,417	14
1863	3,400	6,070	40
1864	3,704	5,404	24
1865	3,391	3,929	21

In 1861 every person on the average was under treatment 1·7 times; in 1862, 1·5; in 1863, 1·8; in 1864, 1·5; and in 1865, 1·2. The proportion of deaths to admissions was, in 1861, one in 163; in 1862, one in 244; in 1863, one in 151; in 1864, one in 225, and in 1865, one in 187; and the proportion of deaths to approximate average strength was one in $93\frac{3}{4}$ in 1861; one in $164\frac{2}{7}$ in 1862; one in 85 in 1863; one in $225\frac{1}{5}$ in 1864, and in 1865 one in $162\frac{1}{2}$.

The following table will show the Monthly statistics of Fever for the last three years:

MONTHS.	1863.			1864.			1865.		
	Strength.	Admissions.	Deaths.	Strength.	Admissions.	Deaths.	Strength.	Admissions.	Deaths.
January	3,400	444	3	3,787	524	2	4,508	443	4
February	3,400	343	1	4,130	353	2	5,519	499	2
March	3,400	545	6	4,632	668	4	6,738	830	6
April	3,400	673	12	3,692	463	0	2,377	391	3
May	4,000	274	8	3,373	256	1	3,061	190	1
June	3,633	165	1	2,807	327	2	3,075	225	1
July	3,627	221	0	2,706	253	2	1,763	162	0
August	3,351	315	1	2,892	318	2	2,324	105	0
September	3,000	500	0	3,336	351	1	1,040	134	0
October	2,800	792	2	3,962	458	1	2,610	143	0
November	3,000	915	2	4,513	804	3	4,179	411	2
December	3,877	883	4	4,678	632	4	3,496	396	2

The proportion of Febrile attacks to strength and of deaths to admissions were in each month:—

MONTHS.	1863.		1864.		1865.	
	Admissions to Strength.	Deaths to Admissions.	Admissions to Strength.	Deaths to Admissions.	Admissions to Strength.	Deaths to Admissions.
January	1 in 7·7	1 in 146	1 in 7·2	1 in 262	1 in 10·2	1 in 111
February	1 in 9·9	1 in 343	1 in 11·7	1 in 171	1 in 11·1	1 in 250
March	1 in 6·2	1 in 91	1 in 6·9	1 in 167	1 in 8·1	1 in 138
April	1 in 5	1 in 64	1 in 7·4	,,	1 in 6·1	1 in 130
May	1 in 14·6	1 in 34	1 in 13	1 in 256	1 in 16·1	1 in 190
June	1 in 22	1 in 165	1 in 8·6	1 in 168	1 in 13·7	1 in 225
July	1 in 16·4	,,	1 in 10·7	1 in 126	1 in 10·9	,,
August	1 in 10·9	1 in 315	1 in 9	1 in 159	1 in 22·1	,,
September	1 in 6	,,	1 in 9·5	1 in 351	1 in 7·8	,,
October	1 in 3·5	1 in 396	1 in 8·7	1 in 455	1 in 18·2	,,
November	1 in 3·3	1 in 457	1 in 5 6	1 in 268	1 in 10·2	1 in 206
December	1 in 4·3	1 in 221	1 in 7·4	1 in 158	1 in 8·8	1 in 198

The monsoon months are the most healthy, as a rule, and the cold weather months the least so. March and April, however, would appear from the table to be very feverish, much more so than May and June, in which the heat is even more intense. I suppose a good effect is produced by the storms which are occasional between 20th April and 15th June, and frequent afterwards, as the monsoon bursts. A little rain sometimes falls in November, but none between that period and April 20th.

The remittent form of fever was frequent in the hot weather of 1863, but not since, and such cases as have occurred were, most likely, neglected cases of the intermittent type. People, even Europeans, who have been a long time in the district, seldom having ague or well-marked paroxysms of fever, don't pay much attention to the badly marked intermittents from which they occasionally suffer. If they have quinine by them they take a dose or two, or, perhaps, if it is convenient, or the fever returns for two or three days in succession, they will call at the hospital, or send for a few doses of quinine. If these individuals are exposed to the sun and have constipated bowels, they are apt to be attacked with fever rather of the remittent type and attended with troublesome head symptoms, but the fever was originally intermittent, and could easily have been arrested by proper treatment. Of this nature, most probably, many of the cases are that are brought comatose to hospital, and regarding which it is almost always impossible to obtain detailed information. Sometimes the patient is represented to have been in his ordinary health, till a few minutes before the coma set in, but often the friends will state that he had suffered, for days, from a fever so slight as not to have been considered worthy of notice, and that he had not taken any regular meals during that period. That sudden coma does set in without very marked symptoms preceding it, and that this coma is caused by malarious poison, I do not doubt. I have observed, too, during this cold weather, a strong tendency to pneumonia, bronchitis and pleurisy, and that the two former of these diseases were so marked by the intermittent character of the fever which preceded or accompanied them, that there was much risk of their being overlooked entirely. I think fever has been, perhaps, less complicated with bilious vomiting than in former years. This used to be a frequent symptom with Europeans lately arrived in the district, but I seldom see such cases now.

In fact, nearly all the Europeans have been here for some years, and, though their constitutions cannot but have to some extent deteriorated, they don't often get fever at all, and those who are attacked, seldom have ague, or any well marked stages of the intermittent. The jungle has, of course, greatly disappeared in the five years we have been encamped here, but I cannot doubt that we owe our immunity from fever greatly to acclimatization. The Kois, who live in the jungles here, are usually all attacked once a year with fever, and about one per cent. die; so far as I can learn they use no treatment, but merely practice the strictest abstinence while under the attack. They will take quinine readily if it is offered to them, but I don't think they would come here to ask for it, unless told to do so, however long they might suffer. If persons unaccustomed to a malarious atmosphere were to treat their fevers in this way, the proportion of deaths would be very large, perhaps 30 per cent., for the paroxysm would certainly return with undiminished force for several days in succession, and every paroxysm would produce more or less deterioration of the system, even in those who made, apparently, excellent eventual recoveries. It is certain that many of the fatal cases among the coolies, that are recorded under other readings, are due to malaria, for, by repeated attacks of fever, even if these are slight and badly marked, the vital force is weakened, diseases of debility are developed, and the patients die with passive dropsy, chronic diarrhœa, &c.

I have not used any treatment this year for fever but quinine, preceded or accompanied, when desirable, with sulphate of magnesia or other saline purgatives. Occasionally a dose or two of calomel and ipecacuanha have been given, but quinine has been the only essential part of the treatment. When patients have become very weak, carbonate of ammonia and carbonate of soda are given along with the quinine, and pains are taken, so long as the patient can swallow, to give broth, or other nourishing fluids, every four or five hours. If any symptoms of coma show themselves, mustard plasters are ordered, or the liquor mylabris is freely applied to the nape of the neck, and the hair is cut short or shaved. I have given enemata of animal broth to patients who were unable to swallow, but I have not observed any good result from this practice. Wine, arrack, and brandy are often given, in cases of coma, by the mouth, if the coma is not so deep as to render the administration of fluids dangerous. Most fever patients give very little trouble, however. They are out-patients and have no complications. They come once, sometimes twice a day, to hospital for three days, and take 4 or 5 gr. of quinine, with or without a purgative, and, on the fourth or fifth day, they return to duty. If the patient is a female, or old and weak, the return to duty is, perhaps, delayed for a day or two longer, to enable them to recover strength. Occasionally too, debility supervenes so immediately on the cure of the fever that the patient has to remain on the sick report for ten days or more, from inability to go to duty at an earlier period ; and some persons never recover their strength at all, without leaving the district, though they may never have had a single paroxysm of fever that gave any uneasiness.

DYSENTERY.

The extent to which Dysentery has prevailed is shown thus :—

YEARS.	Approximate strength.	Cases treated.	Deaths.
1861	750	68	2
1862	2,300	80	10
1863	3,400	203	15
1864	3,704	148	9
1865	3,391	113	7

That is to say, in 1861, one in 34 of those treated died ; in 1862, one in 10 ; in 1863, one in 13½ ; in 1864, one in 16½; and in 1865, one in 16 :—there were attacked, in proportion to approximate strength, in 1861, one in 11 ; in 1862, one in 28¾ ; in 1863, one in 16½ ; in 1864, one in 25 ; and in 1865, one in 30 :—and there died, in proportion to approximate strength, in 1861, one in 375 ; in 1862, one in 230 ; in 1863, one in 226⅓ ; in 1864, one in 411½ ; and in 1865, one in 484⅓.

*The following table shows the monthly statistics** :—

MONTHS.	1863.			1864.			1865.		
	Strength.	Admissions for Dysentery.	Deaths.	Strength.	Admissions for Dysentery.	Deaths.	Strength.	Admissions for Dysentery.	Deaths.
January......	3,400	19	0	3,787	32	0	4,508	10	1
February....	3,400	18	0	4,130	16	0	5,519	10	0
March.........	3,400	13	1	4,632	32	0	6,738	12	3
April.........	3,400	22	0	3,692	12	0	2,377	11	1
May..........	4,000	14	1	3,373	4	0	3,061	12	1
June..........	3,633	10	3	2,807	3	0	3,075	9	0
July..........	3,627	9	3	2,706	3	0	1,763	7	1
August......	3,361	9	1	2,892	12	0	2,324	9	0
September...	3,000	15	0	3,336	4	0	1,040	2	0
October......	2,800	25	1	3,962	10	0	2,610	4	0
November...	3,000	15	2	4,513	11	0	4,179	14	0
December...	3,877	34	3	4,675	9	0	3,496	13	0

The cold weather is, in the main, the period during which this disease prevails. The disease is almost always of a chronic kind, and the patient is very often in an anemic state from fever or bad food. It appears to me that many cases of subacute dysentery are much benefited by Ipecacuanha, given in doses of grains 10, two or three times a day for the first two days after admission, and that this treatment should be preceded by a dose of opium. It seldom appears to produce vomiting in natives, and, often, it produces, in a few hours, a marked change in the evacuations. If ulceration has occurred it would, probably, be best not to give such large quantities of the Ipecacuanha, or to trust entirely to astringent medicines. I have a very bad opinion of the use of mercury, in any form or at any stage, in the class of cases that present themselves here. Quinine in small doses is much more useful; if Ipecacuanha fails, pills of morphia and nitrate of silver have, occasionally, seemed to check purging, over which other medicines had no control. I have now a much worse opinion of the use of mercury than I had in former years, and, even when the patient is debilitated, if the case is at all recent, I would, under most circumstances, give him carefully half scruple doses of Ipecacuanha, each dose preceded by opium, for, I think, the risk of doing so is less than that which is incurred by allowing the disease to run on to ulceration, as may happen, while other medicines, less violent but also less able to arrest the disease, are being tried. Of course, in all cases, if a careful watch is not maintained over the diet, treatment will too often fail. The desire to eat solid food, such as rice with curry, is exceedingly great with native sick who are beginning to recover, and they object greatly to be kept on spoon diet. I lately saw a sick child, who was, I was assured, taking only sago and milk, vomit a quantity of rice, &c. The child was really very ill, and the father was an educated native and most anxious about it, and yet he permitted my directions regarding diet to be disregarded.

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* We print this table as it stands in the M.S., but there is some error in the column of deaths for 1864, as it is shown in the previous table that, 9 deaths occurred in that year.—ED. *M. Q. J.*

DIARRHŒA.

The statistics of Diarrhœa are thus shown:—

YEARS.	Approximate strength.	Cases treated.	Deaths.
1861..........	750	31	1
1862..........	2,300	36	4
1863..........	3,400	78	13
1864..........	3,704	22	3
1865..........	3,391	40	2

In 1861, therefore, out of 31 treated, one died; in 1862, one in 9; in 1863, one in 6; in 1864, one in 7⅓; and in 1865, one in 20:—in proportion to approximate strength there were attacked—in 1861, one in 24; in 1862, one in 63; in 1863, one in 44; in 1864, one in 168, and in 1865, one in 85:—and there died, in 1861, one in 750; in 1862, one in 575; in 1863, one in 261½; in 1864, one in 1235; and in 1865, one in 1695½.

The monthly comparison for three years is as follows:—

MONTHS.	1863.			1864.			1865.		
	Strength.	Admissions.	Deaths.	Strength.	Admissions.	Deaths.	Strength.	Admissions.	Deaths.
January	3,400	9	0	3,787	4	1	4,508	0	0
February	3,400	8	0	4,130	1	0	5,519	2	0
March	3,400	18	3	4,632	1	0	6,738	5	0
April	3,400	9	2	3,692	1	0	2,377	5	1
May	4,000	7	2	3,373	1	0	3,061	8	1
June	3,633	6	2	2,807	0	0	3,075	4	0
July	3,627	4	1	2,706	3	0	1,763	6	0
August	3,361	2	1	2,892	0	1	2,324	3	0
September	3,000	7	2	3,336	5	1	1,040	0	0
October	2,800	3	0	3,962	1	0	2,610	1	0
November	3,000	0	0	4,513	3	0	4,179	4	0
December	3,877	5	0	4,675	2	0	3,496	2	0

It must be understood that all these cases were severe in themselves, or so complicated with other diseases or states of the constitution, that they required careful treatment. For a slight attack of diarrhœa a robust native will not often apply for treatment, and, if he did, he would merely take a dose of medicine and go to his work, his name not appearing in the returns. It is usually with old anemic individuals, wasted by fever and insufficient food, that we have had to deal, the diarrhœa being merely the symptom most marked, and most immediately threatening to life. Of course here, as in dysentery, one of the chief difficulties is the regulation and control over the diet. Many of these cases have a dysenteric tendency, and, in these, I find Ipecacuanha useful in 10-grain doses; indeed, if the patient is at all robust, it appears to me that this remedy is always valuable, if accompanied or preceded by opium, and if the patient will keep in the recumbent position. I find tonic medicines, alternated with chalk, laudanum, and catechu or kinu, to act well with the old and weak. In fact, the points aimed at are to check the diarrhœa by astringent and other medicines, to revent the patient from using unsuitable diet, and to remove y tonics, &c., the state of system which, at least, predisposes o the disease. I often fail in the latter object; though the atient, generally, gets well for the time, he too often has return of the disease, complicated, perhaps, with fever, ronchitis, or dropsy, and he sinks sooner or later.

RHEUMATISM.

The statistics of Rheumatism are thus shown :—

YEARS.	Approximate average strength.	Admissions.	Deaths.
1861	750	30	1
1862	2,300	98	0
1863	3,400	146	1
1864	3,704	81	4
1865	3,391	131	3

Of those treated in 1861, one in 30 died; in 1863, one in 46; in 1864, one in 20; and in 1865, one in 44. There were ttacked, in proportion to strength, in 1861, one in 25; in 862, one in 23; in 1863, one in 23; in 1864, one in 46; and in 1865, one in 26; and there died, in 1861, one in 750; in 1863, ne in 3,400; in 1864, one in 926; and in 1865, one in 1,130.

The monthly proportions for the last three years are:—

MONTHS.	1863.			1864.			1865.		
	Strength.	Attacks.	Deaths.	Strength.	Attacks.	Deaths.	Strength.	Attacks.	Deaths.
January	3,400	15	0	3,787	21	2	4,508	11	1
February	3,400	13	0	4,130	7	0	5,519	7	0
March	3,400	15	0	4,632	8	0	6,738	10	0
April	3,400	18	0	3,692	5	0	2,377	8	0
May	4,000	13	0	3,373	5	0	3,061	10	0
June	3,633	11	0	2,807	4	0	3,075	16	1
July	3,627	18	0	2,706	2	0	1,763	10	0
August	3,351	16	0	2,892	4	1	2,324	5	0
September	3,000	2	0	3,336	7	0	1,040	12	0
October	2,800	7	0	3,962	5	0	2,610	10	1
November	3,000	11	0	4,513	11	0	4,179	18	0
December	3,877	17	1	4,678	2	1	3,496	14	0

The disease prevailed chiefly during the cold months in 1863; in 1864 and 1865 the attacks appear to have been pretty equally divided. Though one would expect rheumatism to prevail chiefly in the cold or rainy seasons, it must be borne in mind, that during the hot months, hundreds of natives, and even some Europeans, sleep outside. I don't mean in verandahs and such places, but under the open sky. The great cold in November, December, and January makes it agreeable and even necessary for all to sleep with closed doors, and, on account of rain, all sleep under roofs of some kind in July, August, and September, and during parts of other months. The cases that came under my notice were mostly of a sub-acute character, affecting the joints in slow successions, and not generally accompanied by any severe febrile symptoms. One or two cases of severe rheumatic fever occurred; one in particular at the Lunka Hospital, I remember, was about as severe as any case I have seen in Europe, though the patient eventually recovered, without any cardiac symptoms that I could detect. I think the application of blisters or mustard poultices to the joints most useful if only one or two joints are attacked at one time, and if there is no intense pain or fever. To these cases, too, the Iodide of Potassium treatment appears applicable. In the more acute varieties, and where many joints are affected, I would prefer warm turpentine applications, and the administration of salines, in combination with colchicum wine and laudanum. In almost all kinds Dover's powder in a full dose at bed-time, combined with nitrate of potash, is useful. I don't think I would give mercury in any form, unless I were satisfied that cardiac affection was imminently to be apprehended.

ANASARCA,

The admissions and deaths are shown as follows:—

YEARS.	Approximate strength.	Admissions.	Deaths.
1861	750	20	3
1862	2,303	26	3
1863	3,400	87	16
1864	3,704	105	25
1865	3,391	33	11

In other words, in 1861—one in 6·7 of those attacked died; in 1862, one in 8·7; in 1863, one in 5·4; in 1864, one in 4·2; and in 1865, one in 3. The proportion of admissions to strength is—in 1861, one in 37·5; in 1862, one in 88·5; in 1863, one in 39; in 1864, one in 35·3; and in 1865, one in 102·8; and the proportion of deaths in 1861, one in 250; in 1862 one in 766·7; in 1863, one in 212·5; in 1864, one in 148·2; and in 1865, one in 308·3.

The next table shows the monthly statistics for the last three years:—

Months.	1863.			1864.			1865.		
	Strength.	Attacks.	Deaths.	Strength.	Attacks.	Deaths.	Strength.	Attacks.	Deaths.
January	3,400	8	1	3,787	38	7	4,508	4	2
February	3,400	11	1	4,130	14	2	5,519	4	4
March	3,400	10	2	4,632	6	2	6,738	5	2
April	3,400	8	3	3,692	9	4	2,377	5	0
May	4,000	6	2	3,373	4	1	3,061	1	0
June	3,633	6	1	2,807	1	2	3,075	4	1
July	3,627	5	0	2,706	4	2	1,763	5	0
August	3,351	3	1	2,892	7	2	2,324	2	0
September	3,000	7	1	3,336	0	0	1,040	0	0
October	2,800	4	1	3,962	3	2	2,610	0	0
November	3,000	5	2	4,513	8	1	4,179	0	0
December	3,877	14	1	4,678	11	0	3,496	3	2

With the exception of cholera, this is, perhaps, the disease least under the influence of medicine, that is met with in ordinary practice. It is almost always, as met with here, the result of extreme weakness and deterioration; indeed, it is, in most instances, rather a symptom of atrophy than a separate affection. The rate of mortality is excessive, and seems to become more so year after year. Albumen is hardly ever found in the urine, and there seems, in few instances, any ground to believe that any one organ is seriously or specially affected. The patient eats and sleeps, and usually complains of nothing but want of strength. Gradually the swelling increases, and his breathing becomes slowly affected; by and by it becomes necessary to use purgatives for the removal of the fluid, and the strength decreases while the fluid is rapidly re-accumulated; and at length, it may be in days, or weeks, or months, the patient dies from effusion into the cellular tissue of the lungs. All these patients are treated carefully with tonics, stimulants and diuretics, and attention is paid to their food and to their being kept warm at night; but, as the return shows, not with much success. It is probable, too, that some of those who recover so as to leave hospital will have a return of the disease if they do not speedily return to their native villages. No doubt, in most instances, the weakness and the deteriorated state of the blood to which the dropsy is due were themselves produced by malarious action, bad food, intemperance, and insufficient clothing. No case of dropsy has occurred among the Europeans, who have good clothing and food, and who, if not free from intemperance, are not in the way of using the vile Hippoo spirit so lavishly sold almost in the coolie lines.

BRONCHITIS.

The following table will show the extent to which this disease has prevailed:—

YEARS.	Approximate average strength.	No. attacked.	Died.
1861.........	750	54	0
1862.........	2,300	12	0
1863.........	3,400	44	0
1864....	3,704	31	2
1865.........	3,391	38	0

That is to say, in 1861, one in 13·9 were attacked; in 1862, one in 191·7; in 1863, one in 77·3; in 1864, one in 119·5; and in 1865, one in 89·2.

The monthly statistics for two years are thus shown:—

MONTHS.	1864.			1865.		
	Approximate strength.	Attacks.	Deaths.	Approximate strength.	Attacks.	Deaths.
January	3,787	12	0	4,508	1	0
February ...	4,130	3	1	5,519	4	0
March...	4,632	1	0	6,738	8	0
April	3,692	1	0	2,377	0	0
May	3,373	0	0	3,061	1	0
June	2,807	2	0	3,075	3	0
July	2,706	0	0	1,763	3	0
August	2,892	3	0	2,324	3	0
September	3,336	5	0	1,040	4	0
October	3,962	1	1	2,610	2	0
November	4,513	2	0	4,179	1	0
December ...	4,675	1	0	3,496	8	0

It is in the cold weather that this disease chiefly occurs, and after or during fever nearly always. All diseases must be registered under some one head; and, where more than one is present, the selection is often very arbitrary. It is probable, however, that the one whose symptoms were most threatening or most evident would be selected. There is nothing to say about the symptoms and treatment, which were of the ordinary nature.

There were two admissions for pneumonia, both of which died, and one admission for pleurisy. There were many more pneumonic cases, but as they occurred with intermittent fever, or succeeded it, they were not separately registered.

ULCERS AND CONTUSIONS.

The admissions and deaths during three years are thus shown :—

YEARS.	Ulcers.		Contusions.	
	Admissions.	Deaths.	Admissions.	Deaths.
1863	308	6	463	4
1864...	285	5	608	2
1865	417	5	761	2

The distinction between ulcers and contusions is of no value here. If a patient is slightly injured and at once applies for treatment, no doubt he is correctly returned under the head of contusion. But should he, on the other hand, not apply for treatment, but go on with his work for days or weeks, till his contusion or wound becomes an ulcer, it is entirely doubtful under which heading he would be placed. With the exception of fever, this is the disease which disables the works most, and this year it seems to have been more frequent than ever. No doubt a number of persons suffering from ulceration before arrival, come on the works, and many more, though free from open sores on arrival, had the marks of old scars denoting a tendency to this affection, but the great majority suffer merely from the result of trivial neglected wounds received on the works. Their state of health is, no doubt, deteriorated by malaria, intemperance, and a food not containing a sufficient amount of succulent vegetable, and, in many instances, there is besides a scrofulous or syphilitic taint to be contended against. The treatment consists of rest, when the patient will submit to it, of the usual local applications, poultices, ointments and plasters, and of constitutional treatment according to circumstances, lime juice, iodide of potassium, quinine and iron, stimulants, mercurials, &c.

Patients who are suffering from constitutional irritation, and who are in danger of their lives, often are offered the chances of amputation; but, as a rule, they won't hear of such a thing, and are apt to leave the hospital altogether, if it is at all insisted on. Two amputations took place during the year, one of the leg near the knee, for gangrene of the foot; the other of the forearm, about four inches above the wrist, for compound fracture of four metacarpal bones. The former died about 22 hours after the operation; the latter recovered. A case of strangulated hernia was reduced by taxis.

Obstetrics.—A case of arm presentation was successfully treated, as far as the mother was concerned, by turning; a case of breach-presentation also came under my care; and a woman, in a very exhausted state, was delivered by the forceps, but never rallied in the least after the operation. All the three children were born dead, and were of full maturity.

Cholera.—Cholera broke out in an epidemic form at Budrachellum, a Hindu village, on the right bank of the river, where there is a somewhat superior temple to which persons from different parts of the country resort, annually, for religious purposes. The town of Budrachellum is well built and in a high situation; its population is said to be 1,500. The annual festival began on April 3rd. The Rev. F. Alexander stated, in his report, that the crowd assembled was about 6,000; of these, about 4,000 were our work people. Drinking and tom-tom beating were kept up day and night, as usual, and the people only cooked once a day. No attempts were made to carry out sanitary arrangements, and a gentleman, who was present, informed me that an offensive smell became very marked at an early period. We had some coolie lines near the village, but as the portion of canal near Budrachellum was almost finished, only about 200 coolies lived in them at the time of the fair; there was also a Dresser there who had charge of the Budrachellum coolies and of those at Setarampoorum and Goondalla, three or four miles lower down. The coolies from all our stations went to the fair; the writers, bazaarmen, &c. &c., from Doomagoodiem were there with their families. All were crowded together for three or four days and nights, on a space of a few yards near the booths, sleeping in their clothes on the bare ground, and most of them were exposed all day, without even the shelter of a tree, to the April sun. Many women, not usually seen in public at all, had to bear all this, and so had children. Besides, some women who had made vows lay down on the hot paving stones at the temple, for the whole or three-fourths of each day, without food and in the burning sun, their relatives occasionally pouring water over them to relieve their sufferings.

The first case of cholera appeared on the 5th April, and was promptly succeeded by three more, all of which seem to have died early. As soon as this became known, the people began to leave in great numbers; still a large crowd remained on the morning of the 6th, but towards the afternoon, this too disappeared. The cholera, however, continued among the coolies and the inhabitants of Budrachellum, and between the 5th and 9th, the Dresser, Sawmy Naidoo, treated 10 cases, half of which proved fatal. This, however, by no means represented the number attacked, as many died and recovered in the village, regarding whose attacks the Dresser was never able to obtain accurate information. He, however, knows that 50 were attacked there and that 20 died. Up to April 13th, the cases were very severe, collapse coming on very quickly.

The disease disappeared from Budrachellum before the middle of May, the Dresser having treated there 16 cases in hospital, of which 6 proved fatal. From Budrachellum the epidemic spread down the river to Setarampoorum and Goondalla; the former is two miles below Budrachellum, the latter four miles. The number of coolies at these places was about 600; among them 6 cases occurred. At Gollagoodiem, where we had 500 coolies living in lines, similar to those at Doomagoodiem, and in a few huts, 48 cases were treated between 13th April and 15th May by Dresser M. Rajahgopaul—of these 24 died. The following table, prepared by Dresser Rajahgopaul, will show the extent to which the villages on the river bank or near it below Budrachellum were injured. It must be understood that these villages are not occupied by our coolies, though the cooly lines were only a few hundred yards from some of them. This table applies not to our lines, but to the villages and their inhabitants proper :—

Names of villages in order downwards from Budrachellum.	Distance from river bank.	Distance from Budrachellum	Attacked.	Died.	REMARKS.
		Miles.			
Setarampoor.........	Close.	2	0	0	
Penapilly......	do.	4	1	1	No treatment.
Royenpetta..........	do.	5	1	1	Do.
Gollagoodiem...	do.	6	0	0	
Sondaram...	do.	6½	4	4	Do.
Nellypauk......... ...	1½ miles.	9	2	2	Do.
Davarapilly...	Close.	10	0	0	
Condapilly............	3 miles.	6	2	0	Treated & cured.
Gollgoonda...	2½ miles.	5½	0	0	

The Dresser is of opinion that the disease was carried into these villages only by the pilgrims returning from Budrachellum, by the river bank, to Rajahmundry. Sondaram, he thinks, suffered most, because it is a large village where supplies can most easily be obtained, and it was therefore preferred as a halting place by the travellers. The Dresser would willingly have given medical assistance in all the villages where the disease showed itself, but the villagers were not desirous to have treatment, and therefore did not send for him.

The cholera appeared at Doomagoodiem on the night of the 7th. The first victim was a Brahmin woman. She was a stranger, and, after leaving Budrachellum, she went, with her relatives, through this station, to visit the temple at Paranasalla, 5 miles higher up the river, and was returning by the same route to her native place when she was attacked. She died in 20 hours, without any rally. The case was promptly succeeded by others, and by the 10th April 13 cases and 4 deaths had been recorded; by the 14th the number of attacks had increased to 109, and 57 deaths were reported; the people also began to leave in considerable numbers. I advised that the lines should be evacuated, and small camps formed in the jungle in the neighbourhood.

Some little delay occurred in carrying out my suggestion, partly, probably, from doubts entertained by the officers in authority as to its feasibility, but chiefly owing to the opposition of the coolies themselves, who at this time left off work entirely, and spent day and night in tom-toming about the streets, offering sacrifices, &c. On the 16th April 41 fresh cases were reported and 23 deaths occurred to my knowledge, but the officer who had charge of the burying parties informed me that 34 interments took place. The night previous to this 400 Northern Division men went away in a body. On April 17th, 400 men were induced to go into camp at Gungole, where there was then no establishment; they were given grass, &c., to hut themselves with, and they were also permitted, to some extent, to occupy empty lines there. They were supposed to leave their sick behind for treatment, but they undoubtedly carried away several of these with them into camp. Another camp formed itself on the other side of the canal, also towards Gungole, but much nearer to Doomagoodiem. The number in these camps gradually increased as the sickness disappeared from them, as persons who at first refused to leave Doomagoodiem then changed their minds and joined their friends in camp. Indeed, this desire to join their companions was a source of danger, as, days after the cholera had disappeared from the camps, there was much risk of a fresh outbreak, because persons from Doomagoodiem, hardly convalescent, were continually taken out there by their relations. Up to the forenoon of the 19th I had received information of 286 attacks and 152 deaths in Doomagoodiem; 40 of these died without treatment. This, of course, includes the Lunka and Lime-kiln, where the united strength was about 700, and where fifty-one cases had been treated, up to that period, with the loss of twenty-two, by Dresser M. Coopchundlal. The disease was at first very terrible on this side of the station, and struck down the peons connected with the hospital, and the men employed in removing the dead, in a most embarrassing way. It was reported from the various out-stations, up to the 23rd April, that eighty-four persons had been attacked, and that thirty-seven had died.

On the 25th April I reported sixteen cases and eight deaths among the coolies in camp towards Gungole, whose number was probably 600 at that time; and at Doomagoodiem the numbers recorded, up to that date, were—attacked 493, died 250. The force of the disease now began to be greater on the Lunka and at the Lime-kiln than on this side of the station, and there was much talk of sending the Lunka and Lime-kiln people into camp. On the 29th this was carried out with regard to the Lime-kiln party, 250 going across the river and partly encamping under trees on the left bank, and partly occupying some ruined huts and lines opposite the anicut. Unfortunately, however, about fifty of the Lime-kiln coolies declined to cross the river, but went back into the jungle, some three miles to the Koi village of Nellypilly, where there was a large tank and many fine trees. Unfortunately, too, they carried one or two sick persons with them, and two days afterwards cholera attacked these Kois, who, by purposely keeping away from Doomagoodiem, had hitherto escaped the disease. Only nine cases occurred, however, and the coolies, after losing four or five of their number, shook off the disease also. I reported on May 4th, a total, up to that date, of 642 attacked, and 328 died; 93 of these had no treatment. At the out-stations, 113 cases had occurred and 50 had died. Of the 642 attacks mentioned above, 103 occurred on the Lunka, and there were also 53 fatal cases at that part of the station up to the 4th May.

About May 10th cholera disappeared almost entirely from the district, and the people gradually returned into the lines. Doomagoodiem—total admissions 665, deaths 334; out-stations—admissions 113, deaths 51.

At Yettapauka, two miles above Budrachellum, on the river bank, we had fifty coolies, all of whom escaped, but the villagers of Yettapauka, or persons resting there, were attacked to the number of six or seven, and there were three or four deaths. The population of that village is about 150. At Seetempett, also on the river bank, two miles further up, but not actually on any road, there is a population of about fifty, all of whom escaped. Tourbacca, on the tramway, and also close to the bandy road to Doomagoodiem, has a population of about 150; and fifty coolies or horse-keepers also lived there. Ten cases, three of which were fatal, are said to have occurred. Nursapore is on the bandy road, six miles from Doomagoodiem; there one fatal case is believed to have happened. The villagers at Gungole are supposed to have escaped, but Bavoorgala, close to the river, a mile and a half from Doomagoodiem, suffered early and severely. Out of a population of 100, twenty were attacked and ten died. At Paravasally, six or seven miles above Doomagoodiem, from five to ten were attacked, and three or four died. The population is about 200. There is no particular road there, but, on account of its temple, many of the pilgrims from Budrachellum visit it annually before returning to their houses. The Koi village of Naddakudoo, situated on the tramway, eleven miles from Budrachellum, suffered very severely. The population is said to be 500. The disease appeared on April 15th and lasted for fifteen days, attacking fifteen and killing nine persons. This village is four miles from Doomagoodiem, from whence the disease was probably carried. Madapoor is two and a half miles from here, and has a population of seventy; there eight cases occurred, and two deaths. Casapatam has a population of sixty, and is three miles from Doomagoodiem. There four persons were attacked, and one died.

I have made enquiries of many persons, and I find it is universally believed that the cholera originated at Budrachellum during the fair, and that it was not conveyed there by any party of pilgrims from a previously infected spot. It is pretty certain that there was no cholera anywhere within sixty or seventy miles previous to the outbreak at Budrachellum, and, therefore, it is highly probable that the popular view is the correct one. The exposure, the drinking, the fatigue, the bad or unaccustomed food, the sleeping on the bare ground or moving about during all the night, the crowding of thousands together, and the want of sanitary arrangements generally, must havehighly pre-disposed to the disease. Whether these causes are sufficient in themselves to excite the disease, I ratherdoubt. I imagine that contact with an affected person, directly or otherwise, would spread the disease among persons so pre-disposed, but if this actualcontagion is wanting I think the exciting cause must be some peculiar and unusual state of the atmosphere. Cholera has been decidedly rare here; yet these Budrachellum feasts have always been held, and it is the experience of the Rev. F. Alexander that in former years, when there were no work-people here, the number of persons attending the festival was greater than in the year under review. In 1857 the disease broke out at Budrachellum during the annual fair, and three men died. Immediately on this the people dispersed, and nothing is known of its further course. Major Haig, R. E., was here in 1860, and I have heard him say that cholera showed itself among the few work-people then under his orders. I have enquired into the history of that outbreak, and I find that it occurred after the Budrachellum feast, *i. e.*, in May, that twenty persons died in all on this barrier, and that the villages attacked were Budrachellum, Seetempett, Doomagoodiem, and Paravasalla. I have not been able to ascertain the number attacked, but I should imagine that, if twenty died, about an equal number must have been attacked and recovered. From May 1860 till April 1865, then, not a single case of cholera occurred within 30 miles of this station or of Budrachellum, though a feast, to which all our people went, and strangers from all parts came, was held annually, under precisely similar circumstances to that of 1865. Besides this, many thousand coolies from all parts of the country have joined the works at all seasons, in parties varying from 1,000 to 50, without ever bringing in the disease. The sanitary condition of Doomagoodiem has never been such, that, had the disease been brought in, it could have failed to spread. All that has been wanting, or that is now wanting, is the spark of contagion to light up the disease.

When I first heard of the outbreak, I sent a short Telugu paper of instructions along with medicines to such places as possessed a native of intelligence. The medicines were pills containing acetate of lead, camphor, and opium, and stoppered bottles containing a solution of carbonate of ammonia in spirits. The instructions were to give the pills every four hours when there was present purging and vomiting with heat of skin and only slight collapse, and to omit the pills entirely and give the solution when the patient became cold and collapsed. In all cases the sick person was to lie down and be covered up; he was also to have hot bottles or bricks placed near his body and was to take a little conjee every four hours or so. Cases were not, in the event of recovery, to eat any rice, curry, or solid food of any kind for three days. I gave no instructions regarding secondary complications; I knew they would not be understood by uneducated, non-professional persons. I preferred to hope that the progress of the experience would not be so rapid as to render it impossible for me or some of my subordinates to visit the villages and outposts occasionally.

Lieutenant Roberts, R. E., was Sub-divisional Officer in charge of all the line from Tourbacca to Nellypauk, and he gave the dressers, in that sub-division, all the weight of his personal influence and supervision, encouraging them and the coolies, as well as the people of Budrachellum, by his presence advice, and care for their wants. His people were all scattered, and, perhaps, it was on this account that his losses were fewer than at Doomagoodiem, but there is no doubt that his arrangements were admirable, and that both his Dressers, Sawmy Naidoo and Rajahgopaul, showed much zeal, self-denial, and skill, not merely in treatment, but in placing the stations and their patients under as good sanitary conditions as possible. When able, they removed the sick to their hospitals for treatment ; when this could not be done, they cheerfully attended them in their lines or villages.

On the Lunka the Executive Engineer allowed me to take an empty bungalow, formerly occupied by an European subordinate, for a Cholera Hospital. It was, therefore, not necessary to discharge the ordinary patients who continued as usually in the Lunka Hospital. The disease spread rather slowly on the Lunka, and Dresser Coopchundlal treated the cholera sick generally at the Bungalow to which I have alluded, but very often in the lines also. He was well supported by Corporal Wells, who got the lines whitewashed and gave considerable assistance by going among the people and keeping the line peons, &c., on the alert. At Doomagoodiem Proper, the disease spread for twelve days with such violence that every department was almost at a stand still. The patients were at first treated as much as possible in a large tent capable of holding eight or ten persons, in a small detached hospital capable of holding three or four, and in a temporary shed run up for the purpose. I endeavoured to get rid of all the ordinary sick, but the in-patients refused to leave, knowing how the cholera was raging in the lines and bazaar. No cholera cases were, therefore, actually treated within the General Hospital, though I was prepared to have admitted them had other accommodation proved insufficient. I very soon saw that it was not desirable, however, during such a fierce epidemic, to treat more cholera patients at hospital than were willingly brought there, for the Hospital servants were struck down one after another, and as the sweepers repeatedly ran away and the cooks more than once threatened to strike work, it was almost impossible to carry on the duty. The Dresser Govindasawmy and myself went round the bazaar and lines morning and evening, seeing all the sick and giving such medicines and directions as appeared desirable. We were thus enabled to treat many cases at a very early stage, and, no doubt, some good was done. The result, on the whole was, however, painful; for at the close of the epidemic our medicines were frequently refused, patients evidently were disappointed, and, most probably, thought our treatment did harm. I believe they erred in this at least, for we were most careful to give nothing that could do harm; in fact, when there was collapse, we gave stimulants only, and insisted on the recumbent posture and warmth to the surface. When the pulse is good and the skin warm, no doubt treatment is most desirable and useful, and during the stage of reaction also. I am, however, sorry to think that we cannot prevent collapse by treatment with any certainty, nor is the use of remedies, in that stage, of any appreciable advantage. Major Stoddard very kindly gave me several bottles of Bathgate's Chlorodyne. It appeared to me a very valuable remedy in doses of forty drops in the early stages. I decidedly prefer it to the pills (of opium gr. i., acetate of lead gr. i., and camphor gr. i.) which I often found it convenient to use. I also gave, in many instances, small doses of laudanum with chalk or carbonate of soda, in the first stage, with seeming advantage. I tried five minim doses of chloroform and laudanum when the chlorodyne was exhausted, but I was not satisfied that any good resulted. When collapse was fairly established, I hardly used any medicine; a little conjee was given occasionally with any spirit we happened to have, and usually five grain doses of carbonate of ammonia were exhibited every four hours. No calomel was given till reaction set in, when a five or ten grain dose was generally given, followed, after a few hours, by half an ounce of castor oil; these doses were repeated or not according to symptoms. In most of the successful cases the collapse lasted only six or eight hours, and the urine was restored in twenty-four hours from the commencement of the attack.

The reaction was, in several instances, excessive and carried off the patient, but overworked as we all were, anxious and hardly able to get our dead buried, there was no opportunity of taking notes of cases. It is the opinion of those Dressers who have been actively employed in former epidemics, that this outbreak was of the ordinary character and severity. I was engaged in 1860 in treating cholera in the D. Troop Madras H. A. on the march from Kamptee to Bellary, and I then formed the opinion, which remains unchanged, that there is a great risk incurred from over-treatment; that our endeavour should be, by all reasonable means, to moderate rather than stop the purging and vomiting, while we have reason to hope that the powers of absorption remain, but that during collapse, when all the functions are in abeyance, we should abstain from giving medicines, in great measure as they may prove a source of embarrassment when reaction sets in. We do not possess medicines capable of always preventing collapse, and therefore many cases perish; but chlorodyne or laudanum, given in wine or spirits, and many other medicines will, no doubt, often check a choleraic diarrhœa that would, if neglected for a few hours, have produced collapse. Mustard applied to the abdomen is probably useful, and I think, that when reaction sets in, mustard plasters should often be applied to the neck and loins.

The heat was not excessive during the epidemic. The wind blew pretty freely and generally from N. E. or N. W.; often the wind was so high as to put the tent in which we treated many patients in considerable jeopardy; these storms are the only objection to the use of tents for the treatment of epidemics. On the 20th April we had a storm with rain, and another on the 24th. The disease decreased on this side of the channel after the 20th, and also at most of the out-stations, but it increased on the Lunka and at the Lime-kiln. On April 27th we had a third storm with thunder, but comparatively little rain fell then or during a fourth storm on May 8th. After the cholera was gone the heat became much greater than before, though we had several storms towards the end of May.

On the Lunka, where the disease spread very gradually, the lines were white-washed, and every compartment where a case had occurred was chunamed and closed up. On this side this course was impossible, owing to the rapid spread and great fatality of the epidemic, but chunam and charcoal were given away freely to all who would apply for them. The evacuations of cholera patients were received in baskets of charcoal or earth, and buried in pits near the hospitals, and into these pits fresh earth was constantly thrown. The hospital here was repeatedly white-washed during the epidemic, and charcoal fires were burned in it every two or three days; but, notwithstanding these precautions, some three or four of the patients, suffering from other diseases, were attacked by cholera. No part of the station escaped, and at least ten per cent. of the natives residing in the compounds of Europeans were attacked, though no European suffered. The medical subordinates escaped, but two of them lost members of their families.

The hospital cook was attacked, and two out of four hospital peons. The hospital waterman lost his child. One, (if not two) out of four men employed to remove the dead was attacked, and the families of two or three of the others. Mr. Vanstavern's horsekeeper seems to have contracted the disease from having put on the jacket of another gentleman's horsekeeper who had just died of the disease.

All the bedding, cumblies, &c., were repeatedly soaked in a tub of boiling water during the epidemic, and, when the disease was over, I had them burned in the presence of one of the Dressers. I also had the cots exposed for several days, and all the old rope cut off and re-placed by new. The lines were white-washed, and cowdung spread over their floors, before the return of the coolies from the camps.

Small Pox.—In March one case came under treatment and proved fatal. In April, during the epidemic of cholera, about five cases occurred but do not appear to have been recorded. In November and December five cases occurred in a small camp on the other side of the river, and three cases at this station. Two deaths happened in November and December from this disease, both patients succumbing on or about the eleventh day of the eruption.

Vaccination has not been practiced during the year. It is believed that the Chief Commissioner C. P. does not approve of Vaccination in these provinces, except under the immediate supervision of the Superintendent of Vaccination, none of whose staff have yet visited this district. The Executive Engineer has, however, authorized me to procure vaccine lymph from Rajahmundry, in order to protect the families of those employed here from the disease that is now among us, and I entertain hopes of getting two or three hundred persons vaccinated during the early months of 1866.

ART. XII.—*American Notes.* By HENRY KING, A.B., M.B.C.H.L. Ex-Scholar, Senior and Junior Moderator, Trinity College, Dublin; L. M. Rotunda Hospital, Dublin; Assistant Surgeon, Madras Army.

SERIES II.

(*Continued from Page* 61.)

21. *Bad Breath.*—In the University and College of Physicians' and Surgeons' Medical Schools of New York, to which no hospitals are attached, the Professors obtain material for "Clinical Lectures," by inviting out-patients to attend for advice and medicine, immediately before the lecture hour. One or more of these are selected, and their cases made the subject of diagnosis and remarks before the class. On one of these occasions I heard Professor Metcalfe give some useful hints for diagnosis and treatment of a complaint not very serious but sufficiently distressing, primarily, to the patient's friends, and indirectly to himself or herself.) Fœtid breath may proceed from gangrene of the lungs, from a carious tooth, or from *follicular pharyngitis*:—the last being the cause to which the Professor's attention was principally directed on this occasion. Premising that the infirmity in question appears to occur most commonly in near-sighted persons, perhaps, because their defective vision brings them into closer proximity to their neighbours,—he pointed out that the follicles of the tonsils and pharynx enjoy the power of elaborating a secretion most offensive to the smell. In some cases the disease is deeper, and is a peculiar form of chronic bronchitis. Occasionally, a dilatation of a bronchial tube will contain putrid mucus, emitting a similar odour, which is, therefore, not pathognomonic of gangrened lung: while its cavity may simulate a tuberculous cavern by its physical signs. The treatment consists in washing out the follicles, when they can be got at, with a caustic; bromide of iodine being the most suitable; chlorate of potash, internally, five grains three times a day; and inhalations of the steam of creosote and hot water; or tar (*if purified*, the empyreumatic oil being highly irritating) may be substituted for creosote.

22. *Bleeding in Pneumonia.*—I happened to hear a lecture on Emetics, one afternoon, by a very ancient Professor of Materia Medica in the University School. The small class, evidently attended rather for amusement than instruction, and applauded loudly the old man's frequent allusions to himself and his practice. From him I learned that ipecacuanha is

never given in large doses for dysentery in the present day. He informed us also that his treatment for pneumonia was, and had ever been, (and, no doubt, will be to the end of his practice,) BLEEDING ; assisted, however, by 'alterative' doses of tartar-emetic and blisters. The greatest of these three remedies was the bleeding. In fifty years' practice the Professor had lost *but one* case of pneumonia—which of us can say as much for himself? The one exception was a child of three years old, who was bled indeed, but died because she was not bled enough!

23. *Narcotism in Ovariotomy.*—Professor Thomas exhibited at one of his 'cliniques' an ovarian cyst, which he had removed two or three days previously, and which had contained six quarts of fluid. The operation had been equally simple and successful. An incision, as long as the index-finger, was made in the median line, through the muscles, down to the peritoneum, which was divided, in the usual way, on a director. A large-sized trocar was then plunged into the cyst, and the latter drawn gently out, according as the fluid contents were evacuated. The pedicle was then ligatured and divided. Not a single bad symptom had supervened, the pulse not having risen above 92. I may add that the case ultimately recovered perfectly, and that, but for the operation, it must inevitably have terminated fatally. My reason for noticing this case, which otherwise presents nothing remarkable, is, that the operator attributed his success, in great measure, to the fact that the patient had been kept in a half-dreamy state, ever since the operation, by means of hypodermic injections of morphia.

24. *Hypodermic Injections* as well of morphia, as of other drugs, were favorably thought of in New York when I was there. Majendie's solution of the former was used (gr. ii. to the oz.,) and from five to twenty minims injected at one time. Any pain resulting from the introduction of the syringe may be obviated by applying a few drops of chloroform to the part, and operating after they have evaporated. Quinine has been introduced into the system in this way, and (it is said) with advantage: although, *à priori*, we might expect the acid, necessary for solution, to produce irritation in the areolar tissue. I found that some practitioners preferred the rectum both to the mouth and to the subcutaneous tissue as a medium for introducing morphia, quinine, &c.

In connexion with this subject I may mention some extraordinary instances of toleration of morphia exhibited by the mouth.* In one case a lady suffering from severe pain, (not peritonitic but neuralgic), arising from an abscess following abortion, took *sixteen* grains of sulphate of morphia, daily, in two doses. She suffered much from constipation in consequence, being sometimes thirty days without a motion of the bowels. Dr. Cox published a case of a patient who took *sixty* grains of the same drug in 24 hours. In the former instance, at least, the salt was analyzed, and found to be of the usual strength. In a case of puerperal peritonitis, eighteen grains were given *hourly* for 24 hours, but with what result, I did not hear.

25. *Opium in Peritonitis.*—Professor Alonzo Clark appears to have adopted the opium treatment of peritonitis before seeing Dr. Graves' well-known remarks on the subject. In a lecture which I had the advantage of hearing in December 1863, he stated that his practice, generally, was to give two grains of opium, or an equivalent amount of some of its preparations, every second hour: but the quantity will vary according to the idiosyncrasy of the patient. If the stomach be irritable, the drug is administered *per anum.* Contrary to a very general opinion, Dr. Clark considers medicines exhibited in this way *equally* efficacious as if given by the mouth, and recommends the same dose in either case. He continues to maintain slight narcotism until the pulse falls to 100, and tympanitis diminishes. When the disease is subdued, the dose of opiate is to be gradually reduced. As to the degree to which narcotism may be, and ought to be carried, the rule is—never to let the respirations fall below 12. The evacuations will, in most cases, be resumed spontaneously, but if they are not, the disease being completely subdued, we may give castor-oil or other mild cathartic; or, better still, enemata.

26. *Puerperal Fever.*—It is in this disease that the beneficial effects of opium are most striking. Puerperal fever generally begins before the third day after delivery; but it may set in (as in one case of Dr. Clark's, which terminated fatally), before the completion of labour. There is a febrile element in the disease, often as strongly marked as in typhus or typhoid. It may be divided into puerperal peritonitis, and puerperal metritis, according as the prominent lesion is of the peritoneum or of the uterus. In either case the disease begins with rigor. The pulse rises to 130 or 140, there is generally cephalalgia and pain in the back at the part where the uterine nerves are given off. In peritonitis, with which

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* I have seen more than once this expression Latinized into *per* ORAM !!!

I am principally concerned at present, there will be, in three cases out of four, tenderness beginning over the uterus as well as pain. The tenderness and pain increases, the mind remains clear, the strength is prostrated. The last symptom distinguishes the affection from the so-called "milk-fever," which also begins with rigor, but in which there is no loss of strength—which, moreover, terminates in 24 or 36 hours.

Such is the disease in the treatment of which Professor Clark has found opium so valuable a remedy. The first case in which he tried it took one hundred grains of opium in three days, combined, however, with calomel. The patient recovered with pyemia, which resulted in the formation of multiple abscesses in the lungs, simulating phthisis, but distinguished from it by the superior whiteness of the spots. It is worth noticing that this woman returned afterwards to the obstetric wards of Bellevu Hospital for delivery, thus proving that sterility, though a probable, is not a necessary result of puerperal fever.

Subsequently, seven cases removed from the labour wards, were placed simultaneously under Dr. Clark's care. One of these was returned, not suffering from the disease; one died within twenty hours; five recovered under the opium treatment which, Dr. Clark says, was not properly carried out in the fatal case. He recommends no poultices, no purgatives, no blood-letting, local or general, no mercury—simply opium: and his known eminence in the profession, as well as his success in the seven cases mentioned, give the greatest weight to his recommendations.

Puerperal metritis is sometimes found combined with peritonitis. In it the lochia are generally suspended, for from six to eighteen hours, returning changed in colour, less red and more yellow than they ought to be, and occasionally fetid. The uterus does not contract; the vagina is hot and dry; the bowels are not tender, and sometimes the belly is not swollen. A very common result of this form of puerperal fever is pyemia, evinced by sweating and great gastric irritability, with loss of strength. The disease will often terminate favorably by the elimination of the pus from the blood, not unfrequently abscesses forming in the breasts, uterus, &c.

27. *Veratrum Viride in Puerperal Fever.*—This drug, suggested by its well-known power of reducing the pulse, has been employed in puerperal fever, and with considerable success. It will probably be found more useful in the metritic form of the disease. It produces, however, great pros-

tration and severe vomiting; and on this account, if no other, must yield to opium in utility. The dose is two minims, increased to five of "Norman's Tincture," every two hours.

28. *Hot air bath in Bright's Disease.*—Some years ago the Physicians of the New York Hospital were persuaded that they had succeeded in curing this disease completely by means of profuse diaphoresis, induced by hot-air baths. This method of treatment was adopted by the other hospitals, and pursued with equal success; indeed, it is still the treatment relied upon. It was found, however, that though *all* the symptoms disappeared under the use of this powerful remedy, the disease inevitably recurred after a longer or shorter interval of health. It may be interesting to note that, in the Bellevue Hospital, gangrene of the leg is a not unfrequent result of Bright's Disease.

29. *Poisoning by Oil of Tansy.*—At a meeting of the New York Pathological Society, Dr. Bauer presented the stomach, uterus, and ovaries of a young woman who had been poisoned by an overdose of oil of tansy, a drug not mentioned by Christison or Taylor, but in common use in America for the purpose of procuring abortion. The former owner of the viscera exhibited by Dr. Bauer, a married woman, having passed, by one week, her menstrual period without menstruating, coolly walked into an ordinary Chemist's shop and asked for something to produce abortion. The Chemist as coolly complied, giving her, out of two bottles, about six drachms of fluid, which she drank on the spot. She went home and died in less than two hours and a half, after severe epileptiform convulsions. The brain was found somewhat congested, stomach considerably inflamed, the uterus contained an ovum. The peculiar odour of tansy was easily recognized when the abdomen was opened, and even, it was said, before.

30. *Hernia Cerebri.*—I heard Professor Hamilton, of New York, (whose surgical works are well-known in Europe) express his opinion that most herniæ cerebri are due to abscesses in the substance of the brain, and, therefore curable by punctures so as to evacuate the contained pus. In most cases of recovery there *has been* a discharge of matter. The hint may be useful to practical Surgeons.

31. *Phosphoric Necrosis.*—It is well known that persons who work in lucifer-match manufactories, or those who are in other ways exposed to phosphoric fumes, are liable to necrosis of the lower jaw. I saw a girl in St. Vincent's Hospital

suffering from this disease in a very severe form. She had worked in a match manufactory for years without inconvenience until a tooth was drawn. This would lead us to infer that any denuded bone would be as liable to attack as that of the lower jaw; but I am not aware of any instance of the upper jaw being attached, and teeth are drawn from it as often as from the lower.

32. *Fractured Radius.*—Professor Van Buren showed me a dry preparation of a fractured radius, which he considered typical of this injury when it results from a fall forward, the hand being thrown out to save the head. The concave articulating surface of the radius is driven in by the impulse of the convex carpal bones, and divided into four or more fragments, more or less separated from each other in proportion to the greater or less violence of the blow. This explanation will account for the external appearance of the injured part.

33. *Ovariotomy.*—In a recent work of Professor Van Buren's, he gives the number of cases in which this operation had been performed, to his knowledge, in the United States, as 36; of which 14 terminated fatally. Five of the cases occurred in New York, and of these two were successful, three died of peritonitis. One of the successful operations is that mentioned in Note 23, I suppose. The second was probably one which I heard spoken of in a discussion at a meeting of the Pathological Society, in which the peritoneal cavity was *rinsed out with warm water,* constitutional symptoms having set in, in consequence of absorption of decomposed blood. During the greater part of the 58 days which elapsed before convalescence was established, these injections were constantly employed, their omission for more than eight hours being followed by the re-appearance of unfavorable symptoms. When any offensive smell was present, a little chlorinated soda was added to the warm water injected. The washing out was practised at least one hundred times in the 58 days. One of the unsuccessful cases also was brought before the Pathological Society. Adhesions were numerous and firm, so that the operation would probably have been fatal whatever after-treatment might have been adopted. No attempt was made, however, to give opium a fair trial. Whereas in the first-mentioned case, morphia was exhibited hypodermically before the patient was put upon the table, and its full influence maintained afterwards till all danger of inflammation had passed away, in this case no opium, in any form, was given until inflammatory symptoms had declared

themselves: and then only twenty-five minims, every third hour, of a preparation no stronger than laudanum.

It is a fact worth mentioning, which I give on the authority of Dr. Van Buren, that Dr. Sims performed ovariotomy on a lady who was delivered of a living child, at full term, six months after the operation.

34. *Dangers of Midwifery Practice.*—Professor Thomas showed me the cicatrix of a chancre on his fore-finger, the result of vaginal examination of a patient, while there was a slight breach of continuity on the finger. The sore was fully developed about a month after infection, and he suffered severely from eruption and sore-throat as long as eighteen months afterwards.

PART II.

REVIEWS AND NOTICES OF BOOKS.

Clinical Lectures and Reports, by the MEDICAL and SURGICAL STAFF of the London Hospital. Vol. I. 1864. London: JOHN CHURCHILL AND SONS. 8vo. pp. 517.

FOR many years past the staff of Guy's Hospital have published, at certain intervals, volumes of Reports, which have been accepted by the Profession as of sterling value; the volume last issued was the eleventh of the third series. The Medical Officers of the Royal London Ophthalmic Hospital lately followed the example of their brethren of Guy's; their fourth volume has been completed, and they purpose issuing in future a Report regularly every quarter. In 1864 the staff of the London Hospital issued the handsome volume before us, and a second volume, which has not yet reached us, was published last October. We observe that the staff of St. Bartholomew's Hospital have recently issued a similar volume of Reports, and we should not be at all surprised if all the Metropolitan and several of the larger Provincial Hospitals were to follow suit.

There can be no doubt that the vast accumulation of carefully observed and recorded facts in Medicine, which is proceeding at the present day to a much greater extent than has previously been the case, must have and is having its effect upon our science. The nineteenth century has witnessed gigantic strides in all the departments of Physical Science; and although Physicians must still refer with pride to the great Fathers of Medicine, still they can but acknowledge that the dark conjectures of the days that are passed sink into insignificance when compared with the positive assurances which have been attained to in the broad effulgence of light which has dawned upon these latter days. The spirit of progress is abroad, and if we could but get a little more of its influence exerted in the domain of Therapeutics, the future of Medicine might be looked to with a more enlarged confidence. We must not be supposed to ignore the advances that have been made in Therapeutics; we acknowledge that many worthy workers have been in the field, that great advances have been made in dietetics, that the curative properties specially attaching to alcoholic stimulants are now much better understood than they were, that some valuable remedies of known action have been added to our stores, but it is unfortunately still left to us to look for a greater amount of certainty as to the actual physiological and curative effects of drugs.

But our parenthesis must not extend or we shall lose sight of the London Hospital Clinical Reports.

The volume is edited by Dr. Andrew Clark, Dr. Down, Mr. Hutchinson, and Mr. Maunder, an array of names in itself a sufficient guarantee that something worthy of attention is to be found in the pages of the book. And a mere glance at the table of contents, promises that the searcher will not be disappointed.

The first article which particularly attracts our attention is Mr. Hutchinson's Clinical Report on Leprosy. He relates four cases, and an appended case which came under notice whilst the pages were passing through the press. He notices the strictly endemic origin of the disease, and that Dr. H. V. Carter of Bombay has, in cases of the anæsthetic form found that the nerves of the affected tracts are usually much swollen owing to the deposit of semi-transparent albumenoid matter between the nerve tubules, by the pressure of which deposit the tubules become disorganized and atrophy ensues. He gives some conjectures as to the true pathology of leprosy, which conjectures he summarizes as follows :—

> "The sum of our conjectures then appears to amount to this, that leprosy is far too specific and peculiar in its symptoms to allow of our supposing it due to the influence of general poverty; that the cases in which Europeans are attacked, all indicate the power of endemic influences; that of endemic influences, food is the one which has most of probability as to its being the true cause; and lastly, as the disease is only met with near the sea, we may plausibly guess that it is in some way connected with a fish diet."

Those of our readers who are interested in this matter will find a valuable paper on Leprosy by Mr. F. Day, in Vol. I., and another by Dr. vanSomeren in Vol. III. of this journal. These gentlemen have a right to speak on the subject as each of them has had a great experience, one in the Lasarushuss at Paliport, and the other in the Leper Hospital at Royapoorum.

We know that Mr. Hutchinson has had an opportunity of consulting the later issues of our journal, but we presume that the earlier numbers must have been sealed books to him, or he might have been inclined to modify his views as to his last conjecture. Dr. vanSomeren says :—

> "The operation of climate in the development of leprosy is certainly not clear, and probably problematical. Not only do we know that the disease prevails in temperate regions, but even within the tropics it is found under very different climatic conditions. On the elevated and cool plateau of Mysore, its frequency renders a Lazaretto necessary in Bangalore, while along both East and West littoral lines of the Indian peninsula, and in the insular climate of the Mauritius, its prevalence serves to make it a scourge."

There are other matters carefully discussed in Dr. vanSomeren's papers which would most likely induce Mr. Hutchinson to somewhat modify his conjectures.

We next come to a paper, by the same author, headed "*Clinical data respecting Cerebral Amaurosis, more especially with reference to that form supposed to be connected with the use of tobacco.*" This is a model paper, the salient points of the cases are given, and the following "conclusions" and "desiderata" are arrived at :—

"CONCLUSIONS.

"1. That there is a special form of cerebral amaurosis usually unattended by other permanent disorder of the nervous system, in which white atrophy of the optic nerves supervenes.

"2. That there is little doubt that this form of amaurosis commences centrically, the alterations in the supply of blood to the optic nerve and retina being secondary.

"3. That in the early stages of this disease, symptoms of functional brain disturbance are usually present: somnolence, headache, giddiness, slight stupor, and sometimes vomiting.

"4. That the symptoms last-mentioned almost always pass off when the amaurosis is more advanced.

"5. That the rapidity of the extinction of sight is usually in ratio with the severity of the other cerebral symptoms.

"6. That this form of amaurosis may occur at any age, and in either sex.

"7. That it now and then follows exanthems, congenital syphilis, disturbed menstrual functions, great anxiety, injuries to the head, &c.

"8. That it occurs in large excess in adult males, typical and uncomplicated examples of it being, indeed, very infrequent in women.

"9. That in men it is sometimes attended by disturbance or suspension of the generative function, but that in the great majority of cases no such connexion is proved.

"10. That there is no reason to think that it is frequently consequent on masturbation, or that it occurs in any especial connexion with acquired syphilis or intemperance.

"11. That no adequate explanation can be afforded of the clinical fact that men suffer from it much more often than women.

"12. That it does not occur in connexion with any special occupation.

"13. That a large proportion of those who suffer from it have been smokers."

"DESIDERATA.

"1. A much more extended series of cases.

"2. More detailed information as to the use of tobacco, by those affected by this form of amaurosis.

"3. Information as to whether there may not be a considerable proportion of men affected by it who have never used tobacco.

"4. Information as to the co-existence or otherwise of varicocele with this form of amaurosis.

"5. Information as to whether it ever occurs in women who have smoked. In some countries where smoking is more common amongst women than it is here, valuable information on this head might be obtained.

"6. Better knowledge as to whether the course of the disease can, in any considerable number of cases, be suspended. 1st, by making the patient give up smoking; or, 2nd, by regulation of sexual habits."

We consider Mr. Hutchinson's first and second desiderata matters of very considerable importance in arriving at any correct conclusion; and we should be inclined to put them in another form, say:—

A very careful general census of the number of persons who habitually consume tobacco.

The number of such persons who use the drug to excess.

The number of cases of amaurosis occurring in such persons.

The number of such persons free from any amaurotic affection.

We must acknowledge, however, that we have no hope that any very definitive conclusions are likely to be arrived at, for our author, who must be acknowledged to be a most careful observer, and a most unprejudiced reasoner, says,—

"It goes for very little to allege that men may smoke very heavily and never suffer, since we know that differences in constitution modify most materially the influence of drugs. The statement that amaurosis is not now frequent in countries where the use of tobacco is far greater than it is in England, requires in the first place proof; and secondly, is open to correction, both on account of difference of race, and difference (often very great) in the quality of the tobacco used."

We have no desire to put in "a plea for tobacco," but we might assuredly say that if a small number only of persons habitually using the drug suffer from amaurosis, the *disease* is due to "differences in constitution," or "difference of race," or that the sufferers use a tobacco of a quality pernicious, when compared with that which is ordinarily consumed. However, Mr. Hutchinson shows that out of thirty-seven cases of idiopathic uncomplicated cerebral amaurosis, symmetrical and in adult males, twenty-two acknowledged that they smoked, and some of them to excess.

Mr. Hutchinson follows with some *Extracts from Clinical Lectures*, in which are several matters worthy of note. First, we notice an interesting post-mortem observation. A man died of phlegmonous erysipelas, some years after having suffered a transverse fracture of the patella; the following condition of the femur was found:—

"In the front aspect of that bone, extending upwards from the intercondyloid hollow, is a broad shallow trough three inches long, evidently formed by the pressure of the upper fragment of the broken bone in gliding upwards and downwards during the flexion and extension of the joint. The union of the fragments is by strong membrane and ligament about two inches in length."

This discovery led to the examination of a patient then in hospital with a recent fracture of the left patella, and an old one of the right,—a transverse fracture with ligamentous union about two inches in length. In this man the trough was very well marked, with a prominent outer lip, evidently the result of growth.

Again we quote from remarks on a case of *Acute Inflammation after puncture of a hydrocele*:—

"I directed your especial attention to the herpetic eruption on the man's lips, asking you to note that it occurred in this instance in connection with acute inflammation of a serous membrane. I reminded you of its frequency as a symptom of pleuro-pneumonia; and added, that it also occurs in ague districts in the early stages of intermittents; that it is also often seen after rigors, consequent upon catheter-passing. In summary, I stated my belief, that it is, in all these instances, connected chiefly with the phenomenon of rigor, and that it certainly is not pathognomonic of any special inflammation. A severe shivering fit, especially if it be the first, may be followed by herpes on the lips, and it matters not whether the rigor be premonitory of inflammation or otherwise."

Dr. Down contributes an interesting account of a case of *Polysarcia* in a girl of imbecile mind. She was treated with various diets, but no very marked decrease in weight occurred until she was placed upon a purely meat diet, when her weekly decrease was 28oz. Subsequently, the extract of the Fucus Vesiculosus was given in half-drachm doses thrice a day, and the weekly decrease was 29½oz. In 8½ months, during which this treatment was kept up (except for one month when she had an attack of scarlet-fever, and was dieted on bread and beef-tea), her weight was reduced from 206 to 147lbs. So that Dr. Down may be said to have out-Bantinged Banting.

Mr. Maunder furnishes a report of six cases of Hospital Gangrene. In the treatment of this affection he recommends the application of nitric acid, and the copious use of water, either as a bath or by irrigation. We must cordially agree with him in the following remarks:

"In all cases, where practicable, a change of air is the grand *desideratum*—removal from one room to another; from one building to another; or from a town to the country, and especially the latter, will exert a salutary influence."

We have frequently found a great change for the better take place in sloughing ulcers and other unhealthy open surfaces, upon simply changing the situation of the patients' bed even without removal to another ward.

Mr. Maunder notices an important practical point:—

"A distinctive character of *hospital* and *traumatic* gangrene. At a time when hospital gangrene exists in an hospital, every variety of sloughing is liable to be regarded with suspicion and anxiety, and I have watched with great interest three cases of wounds after operation which have been subjected to sloughing-traumatic gangrene. In either case the portion of integument, which was ultimately cast off, was subjected to *desquamation of its cuticle*, a pathological condition which did *not* exist in any case of hospital gangrene which came under my observation."

Mr. T. B. Curling supplies *Notes of Cases illustrating some very rare forms of Fracture and Dislocation of the Vertebræ.* Both physiologically and pathologically these cases are of great interest, and they are well worthy of attentive study.

Dr. Hughlings Jackson contributes an admirable lecture *on the study of Diseases of the Nervous System,* which gives us the impression that he must be not only a most observant and enlightened physician, but also a first-rate teacher. He impresses upon his audience that neither the Physiological history alone, nor the Clinical history alone, can be taken as a basis for diagnosis of a case, or as a basis of treatment. The natural history is only to be arrived at from a consideration of both of these. Every case must be studied as presenting :—1. Disease of Tissue : (Changes in tissue). 2. Damage of Organs : 3. Disease of Function. He proceeds to illustrate these general views by special instances ; taking, first, a common general disease which produces much local damage to several organs, viz. : Rheumatic Fever. He notices how the fibrous tissues are attacked, how liable the heart is to be damaged, and how, as a consequence, the functions of all other parts, but especially the lungs and liver, are liable to be disordered ; and he continues :—

> "Now, notwithstanding the importance of the organ affected, we have in rheumatic fever to think more of inflamed fibrous tissue than of heart disease ; and the question, as we stand by the bedside ready to prescribe, is how to prescribe for a patient who has rheumatic inflammation of his fibrous tissues, and just then the information as to the precise valve affected is comparatively insignificant."

The wisdom contained in the following remarks induces us to make the extract, notwithstanding its length :—

> "Suppose the turmoil of tissue-changes is over, and that the patient has got 'well' as he supposes, and perhaps even as we thought too. A year later, he comes to us again, and we find that he is suffering from disease of the heart. We must now think seriously as to the kind of damage to the organ. For, although the damage is exceedingly *local,* it is in an essential part of the mechanism, of a most *central* organ. We get to know generally the kind of damage by auscultation and percussion. Still we cannot treat a damaged organ as a Surgeon can ; he can make an artificial pupil, or nail two bones together, but when tissue-changes are over, we can do little to reverse them. We must pass next to the disorder of function. The patient often does not know that he has disease of the heart, but comes because he has dropsy or breathlessness. He does not come for his damaged organ, but for disorder of function, consequent on derangement-of its mechanism. We may find a bruit when a patient attends for some other disease, but we can do nothing for that. We can

never make the valves fit, nor remove vegetations from them; so that it is of more moment to study the functions disordered, which we can help, than the organ damaged, which we cannot repair. But information about the latter is of great value, as it helps us to gain a clear idea of the former.

"Here let me give you a piece of advice. Never treat a patient on stethoscopic evidence only. The heart may be a bad musical instrument, and yet a good force-pump. However noisy the first sound may be at the base of the heart, if the apex be in its right place, if there be no signs of hypertrophy, no anæmia, if the pulse be good, and above all, if the patient does his work well, we have nothing to treat. To treat such a case would be to treat a sound. It would be just as great a mistake as the drunken captain made, who tried to navigate his vessel round a spec of dirt on his chart, which he mistook for an island. And in cases of aortic, or mitral, regurgitation, we could only, at the most, give such remedies as would improve the general health, or possibly act on the muscular tissue of the heart itself to enable it to keep up the stream of blood in spite of the imperfection of its valves. But we should render the patient much more service by advising him how a man with a damaged heart should choose his occupation, so that the circulation of important organs might not be obstructed, or in other words, that function might not be disordered."

Dr. Jackson proceeds to give several other instances, showing how sometimes it is the disease of tissue, sometimes the disorder of function, which guides the physician in his treatment. He gives some capital illustrations from diseases of the eye, and then takes hemiplegia to afford instances of—1st, damages of the same organ by different affections of its tissues; and 2nd, damages of very different organs, the result of similar tissue-changes. First, he takes four cases in which the physiological symptoms would be *alike*, even in danger, to a nicety. A patient may have hemiplegia (of the left side) —1, from syphilitic disease of the pia-mater on the surface of the right hemisphere setting up some secondary change in the motor track; 2, from embolism of the right middle cerebral artery; 3, because blood has been effused in the right corpus striatum; 4, because a tumour has grown in, or grown into, the right corpus straitum.

"But to think of these cases baldly under the name of hemiplegia as an entity, would leave us with very vague grounds for treatment. We should be on a par with the public, who ask what is good for a cough? In the first case, we should have to treat syphilis; in the second, limited softening of the brain; in the third, some more general affection, of which degeneration of arteries was the more prominent feature, and rupture of one or more vessels in the corpus striatum the dramatic event; and in the last, tumour, if we knew how. In all, we should treat the patient."

To illustrate the second point he again takes four cases of hemiplegia, each of a *different* and well-marked kind, from disease of the same sort, but at different points of the motor tract :—

"1. A patient has suddenly paralysis of the left arm and leg, and of a very small part of the face, and slight deviation of the tongue. Clot in the right corpus striatum.

"2. Paralysis of the third nerve on the left side, and of the arm and leg and of a small part of the face on the right. Clot in the left crus cerebri.

"3. Paralysis of the portio dura, and complete deafness on the left side, paralysis of the arm and leg on the right. Clot in the floor of the fourth ventricle, involving the nuclei of the left facial and auditory nerves, and also the fibres, which have just crossed, coming from the limbs on the right side.

"4. Sudden and complete paralysis of the tongue, palate, and of the vocal cords, all on the left side; weakness of the left limbs, and slightly of the right. Clot involving the lingual and spinal accessory nuclei, and implicating the fibres from the limbs, about their decussation.

"Now, how exceedingly various are the sets of symptoms produced by the same tissue changes. But we have to think, as regards treatment, of effusion of blood in nervous tissue, rather than of disease of the corpus striatum, crus cerebi, pons Varolii, &c. To attend to the seat of damage only, is to study merely the physiology of disease, and is not practical medicine."

Dr. Jackson contributes two other papers, the first entitled, "*Illustrations of Diseases of the Nervous System,*" and the second, "*Loss of Speech; its association with valvular disease of the Heart, and with Hemiphlegia of the right side.—Defects of Smell.—Defects of Speech in Chorea.—Arterial regions in Epilepsy.*" Each of these papers will amply repay perusal and each defies any useful analysis at our hands. Our space is too limited for such notice as they deserve.

Dr. Down gives a very favourable account of his success in the treatment of *Scarlet Fever* by Sesqui-carbonate of Ammonia.* In 1863 a severe epidemic occurred among the inmates and staff of the Asylum for Idiots at Earlswood; in the space of five weeks one hundred and ninety-two persons, out of a population of four hundred and forty, were prostrated with scarlet fever. The total mortality was ten, or a little over five per cent. One hundred and forty-seven of the sufferers were idiotic or imbecile, and nine of these died, seven of them being the subjects of tuberculosis. The remaining forty-five were officers and servants, among whom there were fourteen malignant cases and but one death, a male attendant not long since recovered from an attack of acute rheumatism, with an adherent pericardium and a seriously damaged mitral valve. Dr. Down says the cases may be fairly classified thus:—sixty-five of the simple, seventy-eight of the anginose, and forty-nine of the malignant variety. The treatment adopted in every case was the administration of five grains of sesqui-carbonate of ammonia in one ounce of water every four hours. The diet was milk and beef tea, while wine was liberally given in all cases in which great depression was manifested.

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* See page 159, Vol. V. of this Journal.

Mr. Hutchinson supplies details of some cases of *Relapsing Pemphigus,* for which disease he considers arsenic a specific.

The Gold Medal Reports by the Students of the Hospital follow, and we can only say that the cases appear to have been carefully selected, and well reported.

Dr. Woodman furnishes some *Miscellaneous Cases*; we extract the following from his paper :—

> "The following two cases are interesting as examples of remarkable fecundity in the human female.
>
> "Mrs. W., now a nurse in the London Hospital, was married in 1839, at the age of 21 years. In nineteen years (*i. e.* 1858) she had borne twenty children, viz., eight *single* births, three times *twins*, and *triplets* twice.
>
> "Elizabeth D., of old Montague Street, Brick Lane, was attended by one of the maternity pupils (Mr. Dyte,) in her twenty-sixth labour. She had previously borne twenty-five children, all of them at full time, or near it."

Dr. Andrew Clark contributes an excellent practical paper, entitled *Gleanings from the field of Observation.* Our limited space will not permit us to do much more than refer to this paper. Dr. Clark notices that free nuclei are invariably present in the secretion of the tonsils; that shortly after a meal, the tonsillar secretions contain, 1st, the free nuclei; 2nd, large spherical cells containing particles resembling the free nuclei; and 3rd, large flattened cells, with such excavations as would have been formed by the extrusion of bodies similar in size to the particles in question. He concludes that the free nuclei arise, grow in, and are ultimately extruded from the more or less spherical cells, which then collapse and by and bye become effete. As to the purpose of these bodies he remarks,—

"That they play some part in the process of digestion seems probable from these facts :—that they are formed in greatest numbers about the time of eating ; *that a muscular arrangement exists in the tonsils, by which the fluid in which the nuclei float is expelled during mastication and deglutition ;* and that the outlets for this fluid are so constructed that it is made to pass down the pharynx with the food.

"As the tonsillar juice possesses the property of converting starch into sugar : as the degree in which this property is possessed seems to vary with the proportion of free nuclei present ; and as these bodies are in greatest numbers in the early part of digestion, it is not improbable that they may exercise in the stomach some influence in the digestion of those starchy foods which have escaped the action of the salivary fluids of the mouth."

The Physiologist cannot fail to be interested in the fact that the observations of Dr. A. Clark add another to the two digestive fluids which we know have the power of converting starch into grape sugar.

We again quote from Dr. Clark as to the detection of small quantities of albumen in the urine : —

"Pour not less than half a drachm of *fuming* nitric acid into a test tube ; incline it, and then let a like quantity of the suspected urine trickle down *very slowly* to the acid, over the surface of which the urine will float without the slightest admixture. If albumen be present, a milk-white, sharply-defined, tolerably tenacious film will form at the exact point of junction of the two fluids. This film is never, at first, thick ; and when the amount of albumen in the urine is extremely minute, it may be so thin as to become visible only by reflected light when the test tube is inclined. Occasionally, when very thin, the albuminous film is dissolved in the course of a few hours. Commonly, however, it increases in breadth, diminishes in density, becomes yellow or yellowish-green at its under-surface ; and throws off minute coagula which fall through the acid to the bottom of the tube.

"Nitric acid used in this manner as a test for albumen is also a test of the presence of uroxanthine, or bile—either or both of which are not unfrequently present in temporary and functional albuminaria.

"If, in immediate contact with the acid, a ruby or violet ring is developed, uroxanthine is present ;—and bile also, if in addition to a red or violet there is formed likewise a green-coloured ring, which remains for some time.

"Two feasible objections are urged against depending solely on the employment of nitric acid in the manner described, as a test of the presence of albumen; and I have myself noticed a third; but a careful examination of their force leads me to the conclusion that they are more theoretical than real.

* * * *

"The film produced by the contact of nitric acid with albuminous urine is quite different from any kind of turbidity. Confined to the layer of urine resting upon the acid, white like a disc of compressed cotton, tenacious, and when shaken with its associated fluids, breaking into flaky fragments, it seems improbable that any but the merest tyro should mistake it for anything but what it is."

Dr. Clark further observes:—

"The occasional occurrence of renal casts in small quantity in the urine is no more a necessary sign of confirmed renal disease than the presence of albumen. * * Undoubtedly their presence is of graver significance than the mere presence of a little albumen. But it is only their daily occurrence with failing health which can justify their being looked upon as signs of settled structural disease."

Dr. Clark remarks, on the other hand, that the absence of albumen and casts from the urine does not justify an inference of the absence of structural disease of the kidney. The general failure of health, the loss of flesh, strength, and colour; the nervousness alternating with dulness, the palpitations and breathlessness, and the habitually watery urine with much free ammonia, guide to the original seat of disease.

Mr. Heckford, the late Resident Accoucheur to the Hospital, contributes *Notes of Post Mortem Examinations of still-born Children and of young Infants*; upon which Dr. Barnes furnishes *Comments on the Conditions of Still-birth.*

Mr. L. S. Little, in 20 pages, gives a very interesting account entitled, *Surgical Notes on the Campaign in Schleswig,* 1864.

Dr. Herbert Davies prints a Clinical lecture, *On the Treatment of Rheumatic Fever in its acute stage, exclusively by free blistering.* The treatment was *absolutely and entirely* local,—the cases for the most part of a marked acute character—and the results, in rapid relief of the pains, quick convalescence, and freedom from cardiac disease, highly satisfactory. Thirteen cases are given and admirably tabulated. In six cases the patients were discharged within three weeks, in four within a month, and in three only was there any approach to the "six weeks" which the elder Dr.

Warren used to say was the only thing "good for" acute rheumatism.

There are other papers in the volume well worthy of attention, and the whole concludes with the statistics of the London Hospital for the year 1863.

Our notice has extended to a much greater length than we intended, but we felt bound to offer some proof that the London Hospital staff were fully justified in following the example of the Guy's men. In our view, the book is a valuable and highly creditable contribution to Medical literature, and we shall give a hearty welcome to the second volume of the London Hospital Clinical Lectures and Reports.

How to Work with the Microscope. By LIONEL S. BEALE, M.B., F.R.S., Fellow of the Royal College of Physicians; Physician to King's College Hospital, &c. Third edition. Illustrated with fifty-six plates, containing upwards of 250 figures, and a photographic plate. London: HARRISON, 59, Pall Mall. 1865. Small 8vo., pp. 272.

The Preparation and Mounting of Microscopic Objects. By THOMAS DAVIES, London. ROB. HARDWICKE, 192, Piccadilly, 16mo., pp. 156.

THE first of the two works at the head of this notice is almost a newly written treatise. The author remarks that such great advance has been made in many branches of microscopical enquiry since the first edition was published seven years ago, that many of the paragraphs have required to be re-written, and three new chapters have been added. He tells us in his preface that he has spared neither time nor trouble, and has refrained from hurrying the book through the press, feeling satisfied that time spent in perfecting practical details connected with demonstration is well employed :—

"For, however, some may be inclined to disparage hand work as distinguished from head work, it is certain that no one can become a good microscopical observer, unless he is possessed of considerable manual dexterity, to be acquired only by long practice ; and no work can be higher or more useful than that of assisting to make men original workers in any department of science, and of encouraging original work. Working books by working men will do more towards these ends than the most brilliant discoveries. and the author believes that earnest men cannot labour more usefully than by endeavouring to make others work."

We know that a great many persons are in the habit of using the microscope in a rough kind of way, without possessing much knowledge of its construction or of the optical principles upon which its value depends. Dr. Beale says that much of the disappointment suffered by many who are provided with microscopes may be traced to the erroneous idea that it is only necessary to place an object in the field of the microscope in order to make out its structure. He therefore commences his work with a cursory description of the instrument, then gives directions how to select a microscope, next fully describes the necessary accessory apparatus, and lastly instructs his readers *how to observe*, which, of course, includes the preparation of objects.

Of course, it would be quite out of place were we to enter upon any criticism of Dr. Beale's work in these pages. We enrol ourselves under the banner of those who consider that an accurate knowledge of pathology cannot be obtained now-a-days, without recourse to the microscope, and that, in many cases, diagnosis cannot be said to be full and complete unless this instrument has been resorted to not only to examine altered tissues, but also to investigate the character of secretions and excretions; and we are, therefore, thankful to have at hand such an admirable guide as this volume affords, and we take this opportunity of cordially commending it to the attention of all of our readers who possess a microscope.

The work is beautifully got up; the woodcuts are well executed, and it is interesting to notice that many of them are the work of a lady, Miss Powell. A small lens of low power is furnished with the volume for the purpose of bringing out the details of Dr. Maddox's elegant photographic plate which forms the frontispiece.

Mr. Davies's little book is a very useful and practical treatise on the preparation and mounting of objects. It does not profess to be anything more; indeed, the author says he believes he is actually supplying a want which has long been felt, for the information he has collected into one volume has hitherto found place either in articles scattered in various journals, or as addenda to works specially devoted to a description of the microscope. There are no descriptions of instruments, or of apparatus beyond that actually used in mounting, neither are there any instructions how *to use the microscope.* The entire work has reference solely to the *object* and its preparation; in fact, it might very well be entitled "A Handbook of Microscopic Object Manipulation." There are no illustrations, and, although this rather disappointed us on first looking through the volume, after a perusal we feel convinced that none are absolutely needed.

The book is sold at the very moderate sum of half-a-crown, and we are confident that those who need some practical instruction in the mode of preserving and preparing objects for examination under the microscope will find Mr. Davies's little work an eminently useful guide.

Whilst upon the subject of microscopes, we may mention that we have lately had the opportunity of using the binocular arrangement adapted to a Ross's No. 1 instrument; and we can testify that, as compared with the monocular body, the binocular brings out the details of preparations in the most perfect manner. We only used the lower powers for the examination of injected preparations and polarizing objects, so that we cannot speak as to whether there is a corresponding advantage when the binocular is used with the higher powers. The effect was far greater than we expected, for as soon as the focus had been adjusted and the two eye-pieces had been brought to such a degree of separation as corresponded with the width between the pupils, the irregularities of surface started out into such relief as can only be compared with that obtained by the stereoscope. We have hitherto been quite content with our microscope (a Smith and Beck's) as it is; now that we have had the advantage of ocular demonstration, we shall not be satisfied until we have procured a binocular body.

A Treatise on the Small-pox, by W.C. MACLEAN, ESQ., M.D., *Modified and Adapted for the Natives of India*, by J. SHORTT, ESQ., M.D.; *Translated into Canarese*, by S. AROKEUM PILLAY, 2nd Dresser, Medical Establishment, Mysore Commission. Bangalore, Mysore Government Press, 1865. Pamphlet, pp. 34.

WE are always glad to hear of Native Medical Subordinates doing their best to disseminate amongst their fellow-countrymen sound views of disease, its prevention and its cure; and we think that, in these days of the establishment of Mofussil Municipal Commissions, Native Surgeons and Dressers might do good service by publishing in their own language, simple little tracts or treatises on the principles of Hygiene and the details of Sanitation. This alone would not be of any great avail at present, but if combined with their own *example*, we might hope that in the course of years something of the ignorance and a good deal of the apathy and indifference which now prevail might be removed.

Great credit is due to Second Dresser Arokeum Pillay for the design he had in view when he set about the task of endeavouring to make known amongst the inhabitants of Mysore and Canara, the virtues of Vaccination, as preventive of such a dire disease as Small-pox. The author tells us in his preface that the Canarese dialect is "not his own tongue, yet he has endeavoured to produce a free and idiomatic translation." Our total ignorance of Canarese puts us out of position to judge whether he has or has not succeeded in his endeavour; but we feel bound to say that if his translation is not more idiomatic than his English, he must have signally failed. The preface concludes as follows:—

> "Finally, it is essential that every Vaccinator and Talook Official should have a copy of this Treatise, for the better understanding and discharge of their responsible duties, and persuade the villagers and their children to submit the operation." (Sic.)

The pamphlet contains not only the Canarese translation but also the English text. We do not know what peculiar process Dr. Maclean's Treatise may have undergone in its modification, adaptation, and translation, but we suspect that the Professor of Military Medicine at Netley, would scarcely recognize the Treatise in its present shape, and we are certain that, if any of its lineaments did seem somewhat familiar, he would not be bold enough to father the bantling.

The eruption of Small-pox is designated as "small burning pimples"; "the matter of the pimple" is spoken of, although subsequently it is explained that the matter is contained in pustules.

We meet with the following sentence :—

> "Since the introduction of Small-pox, the benefit derived by the prevention will D. V. be described."

And, again, under the head of Vaccination we are informed :—

> "This is a term derived from Latin, it was originally vacca, which means a cow, vaccination implies that it was taken from a cow, because the matter used as a preventive for small-pox, was taken from that animal in the beginning.
>
> From the disease being taken from an animal and applied to the human being, it prevents the disease of small-pox. This has been approved of by physicians and written in their books."

And, further on, we are told that the redness around the vaccine vesicle, "from the 11th day begins to decrease, fades and gets the colour of the skies." After this, it is not surprising to find that the readers are recommended to "consider the examples here written, and *first vaccinate the males and females, and then their household servants,* from the practice of which small-pox will be prevented."

We would strongly recommend Dresser Arokeum Pillay, and all who, like him, are anxious to inform their fellow-countrymen on such subjects, to first secure the opinion of some one qualified to judge as to the character of the "treatise" which he or they purpose to translate. It seems to us that translations of ill-written and inaccurate books are as likely to do mischief as they are to do good.

PART III.

MEDICAL MISCELLANY.

No. 1.—*Cases from the Journal of the Native Infirmary, Madras, with Remarks.* By W. J. VANSOMEREN, M.D., Surgeon, 1st District.

EVERY hospital physician has found that occasionally he gets a *run* of cases of some one disease or other—a disease not only non-epidemic, but one for whose frequency at the time it is difficult, and even impossible, satisfactorily to account. In illustration of this statement, I may point to several cases of Ischuria, which have recently, within a short period, sought admission into the Native Infirmary. And by *Ischuria*, I do not mean *suppression* of urine, the *Ischuria renalis* of our old nosology, but *retention* of urine, dependent, in the cases under consideration, on other causes than stricture, and which, in the present nomenclature of diseases, it is necessary to include under the generic designation of *Ischuria.*

12th February.—Rajantharum, aged 30, admitted in the crisis of retention last night. Contracted Gonorrhœa fifteen days ago. A number 7 catheter passed last night and this morning, was obstructed about the root of the penis. Bowels opened by injection last night. No fever, some scalding on micturition.

℞. Liq. Potassæ ♏ xx.
Vini. Antimonialis ♏ x.
Tinct. Camphoræ Co. ♏ xx.
Aquæ puræ. ℥ i. *M.*
Ter in die sum.

13th.—Number 8 introduced this morning.

19th.—Urine free and passed easily, no urethral scalding, but some discharge; urine, alkaline.

Omit mixture.

20th.—Left hospital with perfect control over the bladder.

The obstruction noted in the first day's report on this case was little more than a hitch, which was easily overcome by a little patient manipulation. It probably depended on some spasmodic action of the urethra at the point indicated, an action encouraged by the morbid condition of the mucous membrane of the passage, with which the want of control over his bladder by the patient was also connected.

12*th February*.—Thannapillay, aged 40, admitted (yesterday) in the crisis of retention, and relieved by the easy passage of number 6. Previously he attended two days for similar relief. Cause of retention apparently paralysis of bladder. Bowels opened freely by medicine.

Chalybeate pill.
Number 8 to be used *pro re natâ*.

13*th*.—Number 8 used this morning, and I think there is certainly a stricture at the back of the spongy portion. Urine alkaline and ammoniacal and turbid.

℞. Diluti Nitrici Acidi ♏ x.
Tinct. Hyoscyam. ʒ i.
Decoct. Pareiræ Bravæ ℥ iv.
M. Thrice daily.
Cont. Chalybeate pills.

20*th*.—Left hospital with entire control over his bladder.

The Chalybeate pill prescribed in this case is a Hospital formula, composed of Nux Vomica gr. ii., Sulphate of Iron gr. i., and Extract of Henbane grs. ii., and administered thrice daily.

With regard to the opinion, hazarded in the report of the 13th February regarding the existence of a stricture immediately behind the spongy portion (bulb) of the urethra, it is only necessary to bear in mind the existence at this point of the *compressor urethræ* to render it most probable that the constriction was spasmodic in this case also, a conclusion corroborated by the subsequent rapid improvement and recovery of the patient.

15*th February*.—Ramasawmy, aged 25, passing his urine in a small stream since a recent attack of Gonorrhœa. Bowels open; tongue clean.

16*th*.—Urine retained yesterday, and bladder relieved by catheterism (number 7). Bowels open; no urine since last evening, and bladder now distended. Number 8 easily introduced, and bladder emptied; urine alkaline and turbid.

17*th*.—Pareira Brava mixture. Chalybeate pill after meals.

19*th*.—Patient still needs the daily use of catheter.

Continue.

22nd.—For the last three days patient's control over bladder has been improving till now it is complete.

Continue.

24th.—Doing well.

Continue.

26th.—Urine clear. Control over bladder complete. Discharged to Dispensary.

In this instance, as well as in the first case, one cannot but associate the want of vesical power with the morbid condition of the urethra produced by a recent attack of gonorrhœa.

25th February.—Aurokeum, aged 35, admitted (on the 24th) in the crisis of retention and relieved by the introduction of a number 8 catheter, which was used in the morning, and number 7 in the evening. Rose twice at night to pass water, and did so freely. Bowels freely opened by a dose of medicine, and an opiate (Tincture Opii. ♏. xl.) was given last night, after a warm bath.

26th.—The urine being turbid yesterday, patient was prescribed the Pareira Brava mixture ; he passes water without assistance.

Continue mixture.

1st March.—Left Hospital well.

The turbid and unhealthy condition of the urine in this case suggests the idea that the want of power over the bladder was dependent upon irritation of the vesical mucous membrane itself.

10th March.—Shaik Nattal, aged 46, admitted with retention of urine ; relieved yesterday by catheterism, and though the secretion dribbles away occasionally, the bladder undergoes distention from inability to empty it. Number 7 passed in easily this morning.

Chalybeate pill thrice daily.

12th.—Passes urine without assistance, and there has been no dribbling since day before yesterday. Complains of vomiting of food. Bowels relaxed ; tongue clean.

Continue.

℞. Tinct. Catechu. ʒi.
Decost. of Log-wood ℥ii.

Ter in die.

14th.—Discharged well.

This is the only case presenting what French Nosologists term *Retention avec regorgement,* the urine dribbling away from a full and over-distended bladder which had lost completely the power to expel its contents. Its occurrence in the eldest of the five patients was what might have been expected, and points to age as probably the principal operative cause in bringing about the result.

In all the foregoing cases catheterism doubtless constituted the most efficient therapeutic means, but I cannot help connecting the rapid restoration of power in all with the auxiliary medicinal treatment prescribed according to the somewhat various indications of the different cases.

No. 2.—*Extract from Annual Medical Report on the state of the Civil Dispensary, Chittoor, North Arcot, for the year* 1865. By Assistant Surgeon W. F. DEFABECK.

A VERY interesting case of penetrating wound of the abdomen was admitted. A boy, aged 9 years, tending a herd of cattle, was gored by a bullock at a village distant two days' journey from Chittoor. He was wounded to the right of the hypogastric region, and a portion of the ileum two feet in length protruded after the accident. The boy's parents endeavoured to obtain aid in the neighbourhood; failing in this, the child was brought to Chittoor, arriving three days after the accident. He was admitted suffering intense pain, with an expression of despair. He was in high fever and extremely restless. The protruding bowel was found, on careful examination, to be so highly inflamed and in some parts gangrenous, that its return must have been fatal to him. The child was accordingly kept under the influence of opium, a large and light poultice being applied at the seat of injury. Nutritious diet with brandy in small and frequent doses as required was given. The constant and great care which this case required and obtained at the hands of 1st Dresser Chatter Sing are deserving of special mention. Under less favourable circumstances, but for this, the boy must have died; whereas the case turned out most satisfactory. The boy was relieved of pain, his anxiety of mind abated, fever subsided, the efforts of nature to throw off the decomposed portion of the bowel proved sufficient under the aid afforded them, and I was able to cut away the whole of the protruding portion, leaving a very small slough at each extremity (to prevent unnecessary hæmorrhage); this shortly cleared away, leaving the respective ends of the bowel sound and granulating. The contents of the bowel above the seat of injury were passed out from the upper extremity, which protruded about half an inch from the wound: the contents of the large intestine, &c., below the seat of injury being voided per ano. I endeavoured a short time afterwards, as the child had much improved and was gaining flesh, to promote union between the two ends of the bowel. The edge of each extremity being pared off, the raw surfaces were brought carefully into apposition by sutures quarter of an inch apart, the termination of the upper and lower portions being, with the cut ends of the thread, turned inwards. For a while the stitches held the parts together, but I had the mortification of seeing them gradually make their way through the tissues, and all hope of union was (for a time only I trust) lost. The child continuing to make good progress, all inflammatory action having ceased I considered it advisable to send the boy to his village; his parents being desirous also of returning, on my informing them that for some time at least I would not interfere with the hope of benefit; and the child is to be brought in again, when I hope to re-unite the upper and lower portions should there be anything unsatisfactory in the condition of the artificial anus now existing. Regarding this case, I would beg to draw attention to the absence of extensive peritoneal inflammation at the time of the boy's arrival for treatment three days after so severe an injury, with gangrene of the bowel progressing, the very unfavourable circumstances of the accident, and the absence of that comfort and repose so essential in promoting recovery; indeed, in averting a rapidly result fatal. I have already drawn attention to the very efficient assistance afforded me by the dresser, which, under the blessing of God, most materially promoted the child's recovery.

No. 3.—*Extract from Annual Medical Report of the Civil Dispensary at Salem, for the year* 1865. By Assistant Surgeon H. D. Roberts, M.D.

There is nothing specially worthy of note in either the type of these diseases, or in their treatment. One case, however, I would record, as an illustration of Nature's unbounded resources and curative powers. A little native child, about two years old, was playing with a head of thrashed cumboo-stalk, its pastime was suddenly interrupted, and its parents' attention called to it by its cries and difficulty of breathing, impending suffocation. The parents having knowledge of its plaything, and missing it, surmised, and correctly enough, that it had been swallowed, and endeavoured by finger, &c., to get it out—in this they failed, gradually it slipt downwards into the stomach, the difficulty of breathing and sense of suffocaeation passed away, and the child seemed all right again, to promote and maintain which, a dose of castor oil was duly administered by the parents, the castor oil, however, did not bring away the cumboo-stalk. The child being seemingly perfectly well, no further notice was taken of the circumstances. About a month afterwards a small swelling made its appearance in the anterior part of the right hypochondrium, this gradually increased to the size of a hen's egg, was variously treated by the parents, and when sufficiently "ripe" was opened by a native "hakeem." Three days after this operation, something, much to the alarm of parents and hakeem, was seen to project at the opening; unable alike either to make out or treat this new feature in the case, the child was brought to hospital, the projecting body was gently laid hold of by a pair of forceps, and gentle traction readily enough brought out something, which proved to be the "cumboo-stalk" swallowed about a month or so before! For a few days after this, there was discharge from the side, gradually lessening, ceased, the aperture closed, and the case dismissed.

The cumboo-stalk, when swallowed, was about two and a quarter inches long and half inch in diameter; when extracted, the length was the same, but with diameter and circumference diminished, the whole stalk being covered by a viscid protecting mucous; with the exception of the malaise experienced at the time of swallowing the stalk; and the little local irritation attendant upon the formation of the abscess in the side, no constitutional symptoms or disturbance of any kind was experienced by the little patient, nor did the alimentary canal resent the presence of a foreign body within it.

No. 4.—*Chlorodyne a remedy for Cholera.*—The following letters have been forwarded to us by the Principal Inspector-General, Medical Department:

LETTER No. I.

FROM P. STREE RAMOOLOO NAIDOO, Cashkeeper, Great Southern of India Railway; to the Inspector-General of

Hospitals, Madras Presidency, Madras, dated Trichinopoly, 26th December 1865.

" I beg to forward herewith a statement of people attacked with cholera during the month of December 1865, who were treated by me at my own cost; and out of the total number 32, of which 6 died, the remainder got cured.

" The medicine I gave is Dr. J. Collis Browne's Chlorodyne, which has proved a most valuable remedy for cholera.

" In the commencement I had very little faith in this remedy, but gradually it has turned out very valuable.

" There is still cholera prevailing in these villages, and I am continuing to give the same medicine.

" I beg your honor will bring this to the notice of higher authorities, so that it may be published in the Gazette of Fort Saint George, for the public information.

" I sent a copy of this statement, with letter, to the Deputy Inspector-General of Hospitals, Southern Division, at Trichinopoly."

The villages alluded to in the above letter are Aubishakaporum and Beema Naickenpolien.

The statement alluded to shows—attacks 32 ; cured 24 ; died 6 ; remained under treatment, 2.

LETTER No. II.

From the same to the same, dated 8th January 1866.

" With reference to a Memo. received from you in answer to mine of 26th December 1865, I beg to enclose herewith an additional statement of patients attacked with cholera between 27th December 1865 and 8th January 1866 inclusive, showing the success which attended my administration of Dr. J. Collis Browne's Chlorodyne.

" The good effects which this medicine produced on the patients was so successful, that I think I will be doing an act of justice to the public in bringing the same to their notice. It at once checks the progress of the disease by administering the same on the very first motion, and when taken after a few successive motions, it does in most cases answer its purpose, though with some difficulty.

" Nor is this valuable remedy intended for the cure of cholera alone : in cases of nervous headache, dysentery, vomiting, &c., its application have done, I can say, a world of good.

" My sole reason in requesting its publication in the Gazette is merely that the natives may become acquainted of its good results, as a majority of them place little or no faith in English medicines owing to a certain prejudice existing among themselves; and, of course, if such an advertisement (which is intended to point out its usefulness and success) appear in print, they will clearly find out the error of their superstitition of having recourse to native medicines and at once satisfy themselves with this invaluable remedy."

The second statement does not account for the two cases remaining under treatment on December 27th, but shows—attacks 20 : cured 13 ; died 2 ; under treatment 5.

[We print the above as average specimens of the kind of letters which non-professional people write on medical subjects. Trichinopoly appears to be favoured with more than one amateur medical man. Not long ago there emanated from that station, what appeared to the author, a satisfactory demonstration that "*the cholera is in the milk,* Q. E. D.," and now we have the railway cashkeeper reporting a success in treatment far beyond that which is met with generally among physicians.

We presume Stree Ramooloo Naidoo does not claim any originality in the use of Chlorodyne for the treatment of cholera. In the English Medical and other Journals we meet with advertisements from various Makers of Chlorodyne, stating that "Earl Russell sent to the College of Physicians a communication received by him from Manilla, (where cholera has been raging fearfully) to the effect that of all remedies tried, Chlorodyne was the most effective. (See the *Lancet* and *British Medical Journal,* 31st December 1864.)"

In our hands the remedy has not proved of the great value in cases of true cholera which Stree Ramooloo Naidoo and the advertisers would have us believe it possesses. We apprehend the truth is to be found in the second paragraph of the cashkeeper's second letter,—if our interpretation of this somewhat obscure paragraph be correct. Chlorodyne is undoubtedly useful in diarrhœa, and if given sufficiently early in the premonitory diarrhœa of cholera (in those epidemics where this premonitory diarrhœa is present), it may and frequently does arrest this diarrhœa, and thus prevent the full development of the disease. But when serous vomiting and purging has set in, with threatened or complete collapse, and suppression of urine, Chlorodyne does not possess any special curative powers, and its administration may actually be hurtful in consequence of the morphine which enters into the composition of the medicine.

Some practical remarks upon this subject will be found in Dr. Houston's Report of the Cholera epidemic on the Upper Godavery last year. See pages 321—322 of the present Number.—Ed. *M. Q. J.*]

No. 5.—*Paralysis of the Tongue. Extract from Annual Report of the Civil Dispensary, Berhampore, for the year* 1865. By Assistant Surgeon R. W. Cockerill, dated 1st January 1866.

" The other remarkable case was a woman sent by the Sub-Magistrate of Itchapore, for my opinion, whether she was really dumb or only pretending. Her friends said that she went out one day to the jungle in good health, but returned unable to speak. By signs she intimated that two men had caught hold of her, forced open her mouth, and put some powder upon her tongue, then holding a knife to her throat had robbed her,—she called out at first, and then lost her voice. The robbers on being found, confessed, and have been sentenced ; she has no power of motion over the tongue, and can only swallow by throwing the food far back into the mouth, and pushing it with her fingers. I imagine excessive fright must have produced paralysis."

No. 6.—Note. By Geo. Mackay, M. D., Surgeon Major. *Will a child, born after the mother has had Small-pox, and contracted after she has conceived, be liable to contract the disease ?*

I lately met with a case of a child born under the above circumstances. The infant bore no marks of having suffered from Small-pox ; about two months after its birth vaccination was attempted, and failed. This case might then have been recorded as others have been (vide British American Journal, February and March 1861,) to prove that the mother having suffered from the disease, the child was consequently protected. I therefore think it worthy of record that on vaccination being repeated some months afterwards, it proved successful. I also met lately with another case in an adult born under the above-mentioned circumstances, who bears good marks of vaccination performed in infancy, and in whom re-vaccination has lately been successful.

These instances seem to prove that vaccination should not be neglected in such cases under the idea that it will not succeed, and is consequently unnecessary.

As shown in my Memorandum, page 132, No. 11 of this Journal, persons who bear marks of having suffered from Small-pox, may be successfully vaccinated, and it may be presumed that such persons, if exposed to the contagion, would have been liable to a recurrence of the disease. Whether vaccination can protect them from such a recurrence, it would be interesting to ascertain, but in the meantime so simple a precaution should not be neglected.

No. 7.—*Case of Abscess of the Liver.* By Thomas Croudace, Esq., M. R. C. S., &c., Assistant Surgeon, Madras Army.

Elizabeth Frost, Æt. 13, a pale delicate-looking girl, of strumous habit, brought to Sunderland Infirmary, September 29th, 1853, on account of a swelling in the right hypochondriac region, over the liver; no history was recorded at this time; Ung. Iodinii. was directed to be rubbed on the part, and a mixture of soda with rhubarb ordered. The patient did not attend again, and nothing was heard of the case until November 1st, 1854, when I was requested to visit her. I then found a swelling in the epigastric region which was painful and very tender to the touch, its size about that of a walnut. Her mother stated that she had generally enjoyed good health; that, about *five* years before, she had an abscess in the right side, which was opened, and since that time she had been quite well, but there was always a fulness in that side afterwards. About a year ago, she had a fall on the right side, followed by the swelling for which she applied for relief at the Infirmary, and after using the remedies ordered at that time, she continued to enjoy her ordinary good health, never complained of pain in the part, and went about as usual, assisting her mother in domestic work, carrying burdens, &c.

The swelling in the epigastric region commenced a month before I saw her; was at first about the size of a marble, and did not cause any inconvenience, nor prevent her going about as usual; as it increased in size, it became painful, and she suffered from lassitude, was easily fatigued by the slightest exertion, and became restless. When I saw her (on the 1st November) she complained of pain in the part; her countenance was anxious, the breathing hurried, pulse 120, appetite bad, and she had frequent rigors, followed by cold perspirations and urgent thirst.

Ordered Quinæ Disulph. grs. ii. ter die sum. and Morphia gr. 1-10th at bed time.

The swelling continued to increase in size, and became more tender, respiration became more and more impeded, and she was unable to lie on either side; on the 11th November distinct fluctuation was felt in the swelling, which had attained, at this time, the size of an orange; its margins were well defined, and its surface inflamed. A medical friend now saw the case with me, and a puncture was recommended, to which the friends of the patient objected; next day the pain was much increased, and on the 13th she died.

Post Mortem Examination 30 hours after death.

The integuments and fasciæ of abdomen were strongly adherent to, and could not be separated from, the apex of the tumour, which was found to be an abscess, containing more than half a pint of yellowish pus, without fœtor; the sac of the abscess was formed by the integument, and the parietal layer of peritoneum; it was situated over the lobe of the liver, about an inch to the left of the longitudinal fissure, but separated from the hepatic substance (with which it had no communication) by the posterior surface of the sac which adhered to the liver; it extended upwards towards the diaphragm; the liver was much larger than natural and universally congested; the *left* lobe presented no abnormal appearance beyond congestion. The *right* lobe, much enlarged, and congested, was occupied at its lower free border by an abscess, which extended from the margin of the longitudinal fissure, to the middle of the lower free border, and spread upwards and backwards through half the extent of this lobe; it contained more than a pint of pus, which, like that contained in the superficial abscess, was of a yellowish colour, and without smell.

The *Pericardium* was enormously distended, extending upwards to a level with the upper margin of the second left rib, and contained serum, with fibrinous coagula floating in it; the inner surface was reddened; the anterior surface of the *heart* was of a bright pink colour and mottled with patches of fibrine, in fact, resembling honeycomb; the endocardium and valves were healthy. The *lungs* presented no abnormal appearance.

Remarks.—Abscess of the liver is not commonly met with in England, especially at so early an age as in this case. Nearly all writers have noticed the circumstance that an abscess may form in the liver and continue for a long time without giving rise to any symptoms of disease in that organ. Dr. Budd, in his work on Diseases of the Liver, remarks, "When an abscess in the liver has become encysted, if small and deep seated, it causes but little constitutional disturbance, and provided it remain stationary, the patient may enjoy even tolerable health for years." These remarks are well illustrated in the present case; when all symptoms referable to hepatic disease were absent, there was no complaint of pain even after the fall on the side; from the time that I first saw the patient no fulness could be detected in the situation of the organ; there was no jaundice; no pain in the shoulder which has been stated to be a sign of hepatic abscess; there were none of the sympathetic symptoms usually described, such as vomiting, diarrhœa, cough; nothing, in fact, to lead to a suspicion of disease in the liver; the patient continued apparently in good health, and was able to undergo considerable exertion from the time of her fall, till the formation of the swelling in the epigastric region. At the time that she fell the liver probably sustained injury to a greater or less degree, followed (in a scrofulous subject) by a slow inflammatory action, which gradually led to the formation of abscess, without, however, causing any constitutional disturbance. In regard to the abscess in the epigastric region, it is an interesting circumstance that no communication existed between it and the abscess in the liver, the swelling was situated over the left lobe of the liver, about an inch below the ensiform cartilage, the hepatic abscess occupied the substance of the right lobe. Another interesting point is the supervention of pericarditis, no doubt, from extension of inflammatory action to the diaphragm in the immediate vicinity of the posterior wall of the sac, and from thence communicated to the pericardium where it is in contact with the pleural surface of the diaphragm.

No. 8.—*Extracts from the Medical Journals of the General Hospital, Madras.* By W. N. CHIPPERFIELD, Acting Physician, General Hospital, and Professor of Medicine and Clinical Medicine, Madras Medical College.

Cases of Acute and Subacute Dysentery.

No. I.—D. M., Seaman, age 25 years.

A robust European, of sanguine temperament, and temperate habits.

2nd September 1865.—Admitted late last night, complaining of having had dysentery for several days. The bowels were moved several times last night, the stools are semifluid, bilious feculence, mixed with blood and mucoid exudation. Has pain on pressure in both iliac regions, with some gurgling in the cæcum, and is also very tender over the transverse colon. Has not much straining when at stool. Tongue white in centre, red-edged, moist; pulse firm and full; skin rather warm; urine scanty. Says he had fever yesterday evening.

℞. Olei Ricini ʒ i.
Aquæ Menthæ pip. ℥ i. To be taken directly.
Milk diet.

3rd.—Had fever again last evening, without rigors but with profuse perspiration. An opiate enema was given and he slept pretty well. Is now free from fever. Bowels moved several times yesterday, stools same, but contain less blood; tongue foul; pulse soft, moderately full; skin of normal temperature; urine scanty.

℞. Pil. Hydrargyri gr. v.
Pulv. Ipecac. c̄ Opio gr. v. *M.*
fiant Pilulæ ii. Thrice daily.

4th.—Slept pretty well, had very slight fever last evening. Bowels moved four times, stools of same appearance. Complains of much pain in the abdomen, which is tender to pressure. Tongue red-edged, moist; pulse same.

Milk diet with one pint mutton broth.
℞ Mucilag. Acaciæ ʒ ii.
Tinct. Benzoini Comp. ♏ xx.
— Opii ♏ x.
Aquæ. Cinnamomi ℥ iss *M.* thrice daily.
Turpentine stupe to abdomen.

5th.—Doing well. Four stools, free from blood and exudation. Has a little pain in the rectum. Tongue clean; pulse soft, full. No fever.

Low diet.
Continue medicine.

℞ Ipecac rad Contrit. ℈ i.
Tinct. Opii. ♏ xx.
Decocti. Amyli. ℥ ii. *M.* ft. Enema.

To be administered if the pain continues.

6th.—The enema was given at bed time. Slept well. Free from pain. Bowels moved thrice; stools yellow feculence, more formed; tongue clean; pulse soft, of fair strength; urine normal in quantity and appearance.

Continue mixture.

7th.—Improving. Bowels moved once, stool half-formed. No pain.

Continue.

8th.—Doing well, one healthy stool. No complaint.

Continue.

9th.—Well of the dysentery. Feels a little weak.

Omit medicine. Half diet.

11th.—Still feels weak and not quite fit for work.

Full diet. 4 oz. Sherry.

14th.—Quite well. Discharged to duty.

No. II.—R. F., Pensioned Private, aged 42 years.

A European of sanguine temperament and temperate habits.

22nd September 1865.—Admitted complaining of griping pains in the bowels, with frequent calls to stool. Has much tenesmus, and passes only small quantities of mucoid exudation mixed with blood. Pulse firm, moderately full; tongue coated with a yellowish fur.

℞. Tinct. Opii ♏xx.
Aquæ font. ʒii.
To be given directly.
Sinapism to epigastrium.

℞. Pulv. Ipecacuan ℈ii.
Syrupi ʒii. *M.* fiat Bolus
To be given in half-an-hour.
Milk diet.

Vesperi.—Moderate emesis occurred after taking the ipecac; feels much easier now as regards the abdomen, but still has severe pain in the rectum. Bowels moved copiously twice, stools semifluid with a quantity of blood and exudation.

℞. Ipecac. Rad. Contrit. ℈ i.
Tinct. Opii. ♏ xx.
Decocti. Amyli ℥ ii. *M.* ft. Enema.
To be given at bed-time.

23rd.—Slept well. Bowels moved thrice this morning, stools much improved in character; tongue nearly clean, moist; pulse soft, moderately full; has some pain in rectum.

℞. Hydrarg. c̄ Creta gr. v.
Pulv. Ipecac. c̄ Opio gr. v. *M.* ft. Pulv.
To be taken thrice to-day.

24th.—Slept well. Bowels moved several times; stools semi-fluid and clay-coloured, contain a little mucous and blood; pulse weak; tongue red.

℞. Podophylli gr. i. in syrup directly.
Omit Hydrarg. c̄ Creta. Continue Pulv. Ipecac. c̄ Opio.

25th.—Bowels moved several times; stools bilious; dark feculence, no blood. Has still a little tenesmus and tormina when at stool; tongue clean, pale; pulse 96, soft, weak. Slept badly.

Low diet. No medicine to-day.
Opiate suppository at bed-time.

26th.—Much better. Slept well. Three semi-consistent healthy stools; no pain in bowels; pulse weak.

Half diet without potatoes.
6 oz. Port wine.

27th.—Feels quite well. Bowels natural, wishes to be discharged.

No. III.—*Case reported by Student Rungasawmy.*

A. McK., an East Indian pauper, aged 65 years.

22nd September 1865.—Admitted stating that he has been suffering from dysentery for several days. Has pain and tenderness in the left iliac region, with griping and straining whilst at stool. Tongue pale and moist, somewhat furred at base; pulse soft, weak; no fever.

Spoon diet. To be watched.

Vesperi.—Has had several stools, consisting of blood and mucus without feculence.

℞. Pulv. Ipecac. ʒ ss.
Tinct. Opii. ♏. xx.
Decocti. Amyli. ℥ ii. *M.*
ft. Enema at bedtime.

23rd.—Slept well, but the bowels have been moved three times, stools semi-fluid, yellow, no blood or mucus; tongue cleaning, moist; pulse 60, weak.

Low diet.
℞. Hydrarg. c̄ Creta gr. v.
Pulv. Ipecac. c̄ Opio gr. v. *M.*
ft. Pil. ii. thrice daily.

24th.—Bowels moved thrice, stools semi-fluid, clay coloured. Very little pain in abdomen; tongue clean; pulse of good volume and strength.

Continue.

25th.—Doing well. Bowels moved scantily once, stool scybalous. Says he has slight pain in abdomen.

℞. Olei Ricini ℥ i. directly.

26th.—Improved. Oil acted copiously twice, no blood or mucus. Tongue clean. Pulse steady.

No medicine. Half diet.

28th.—Quite well. Discharged.

No. IV.—*Case reported by Student Hoosman Khan.*

D. G., a pensioned Sergeant, aged 45.

A robust European of sanguine temperament and temperate habits.

26th September 1865.—Admitted yesterday evening, stating that he had been ailing from dysentery for several days. Has very frequent calls to stool with much straining. Has pain on pressure over the whole course of the colon. Tongue thickly coated, moist; pulse 90, full and firm; skin moderately warm; stools consist of blood and mucus only,

℞. Pulv. Ipecac ℈ i. in bolus now.
Milk diet.

37*th.*—Slept well. Bowels moved but thrice since taking the ipecac. The stools are semifluid, yellow feculence, no blood or mucoid exudation. Tongue cleaning, moist; pulse soft, of good strength. Has some pain in the abdomen.

℞. Hydrarg. c̄ Creta gr. v.
Pulv. Ipecac. c̄ Opio gr. v. *M.*
ft. Pulv. to be taken thrice daily.

28th.—Says he is much better: bowels moved four times, stools semifluid, clay-coloured feculence, mixed with some glairy mucus. No pain in abdomen. Tongue clean; pulse 84, soft, rather weak.

Repeat.

29th.—Improving. Two stools, more natural. No pain in abdomen. Wants some solid food. Tongue clean; pulse normal.

Half diet.
℞. Sp. Ammon. Aromat ♏ xx.
Infusi Chirettæ ℥ ii. *M.*
thrice a day.

30th.—Not nearly so well; slept badly, and had several stools in the night, with slight griping and much straining. The stools are principally ulceration-shreds and exudation mixed with blood. Tongue clean but fissured; pulse 90, soft and weak.

Low diet.
℞. Pulv. Ipecac ℈ i. in bolus now.
℞. Pulv. Ipecac ʒ ss.
Tinct. Opii. ♏ xx.
Decocti. Amyli ℥ ii. *M.* ft. Enema.
to be administered thrice.

1st October.—Slept pretty well. Bowels not moved so frequently, stools fluid, yellow feculence, still mixed with blood and exudation shreds. Tongue and pulse as before.

Repeat as yesterday.

2nd.—No improvement. Bowels frequently moved, stools chiefly gelatinous mucus and blood. Has much pain and straining. Pulse very soft.

Repeat.

3rd.—Bowels moved four times; stools semifluid, yellow feculence, with a quantity of sanious gelatinous mucus at the bottom of the vessel. The pain and straining continue. Has not much nausea from the ipecac.

Repeat.

4th.—Better. Bowels moved thrice, no mucus or blood. Pulse 80, soft; tongue chapped, clean.

No medicine.

5th.—Improving, but has some warmth of skin and a little griping pain.

℞. Liq. Ammon. Acet. ʒ ii.
Vini Ipecac. ♏ xx.
Tinct. Opii. ♏ x.
Aquæ font. ℥ ii. *M.* thrice daily.

6th.—Improving. Two healthy semi-consistent stools. Skin cool; pain gone.

Repeat.

8th.—Doing well. But complains still of griping. Three stools, said to contain mucus but no blood.

℞. Tinct. Benzoini Co. ♏ xx.
Tinct. Camphoræ c̄ Opio ʒ i.
Mist. Camphoræ ℥ iss. *M.* thrice a day.

9th.—Very much better. Stools natural. Feels weak.

Full diet, no potatoes.

11th.—Quite well. Discharged.

No. V.—*Case reported by Student Anantheram.*

C. F., Ship's carpenter, age 31 years.

A European of temperate habits and sanguine-nervous temperament.

3rd October 1865.—Admitted complaining of having been ill from dysentery for the last eight days whilst on voyage from the Mauritius. Has general griping pain in abdomen, but no fixed tenderness on pressure. Says he has not passed any blood the last two days. Bowels have been moved four times since admission this morning; stools semifluid, varying in colour from bright yellow to almost black. Had a dose of castor oil yesterday. Tongue clean; pulse 76, full, firm.

Low diet.

Ipecac. and Opium Enema at bed time.

℞. Tinct. Benzoini Co. ♏ xv.
— Camphoræ Opio ʒ i.
Mucilaginis Acaciæ ʒ i.
Aquæ Cinnamomi ℥ iss *M.* thrice daily.

4th.—Feels much better. Bowels moved much less frequently; stools of more natural appearance, but still relaxed.

Continue.

7th.—Doing well. Bowels moved thrice, stools half-formed, healthy. Tongue clean; pulse soft, rather weak.

Continue.

6th.—Improving steadily. Omit medicine. Half diet.

7th.—Feels pretty well, but asks for the mixture as the bowels have been relaxed thrice. Tongue and pulse normal.

Continue Benzoin mixture.

8th.—Better. Two stools, nearly natural. No pain in abdomen.

Continue.

10th.—Doing well. One stool, natural. No pain; tongue and pulse natural. Begs the mixture may be continued.

Continue.

12th.—Progressing very favorably. Full diet. No medicine.

15th.—Says he had a great deal of pain last night. Bowels not moved yesterday, but had one rather costive stool in the night. Tongue clean; pulse normal.

℞. Olei Ricini ℥ i. directly.

16th.—Oil acted twice; says he is quite well and free from pain to-day.

No medicine.

18th.—Quite well. Discharged.

No. VI.—P. B., Seaman, aged 36 years.

A German of bilious temperament and rather free habits.

23rd October 1865.—Admitted last night complaining of profuse diarrhœa attended with much straining and severe pain in rectum. Had an ipecac and opium enema on admission, and again at 10 P.M. Had several stools during the night; they are fluid, light brown, and contain blood. Has no fixed pain in abdomen, but is much griped at times. Pain in rectum so severe that he sits on the cot with a pad pressed firmly against the anus. Tongue morbidly red, moist; pulse a little hard, was much nauseated by the enemata. Is subject to relaxed bowels.

℞. Tinct. Kino Co. ʒ i.
— Catechu ʒ i.
Mist. Camphoræ ℥ ii. *M.* thrice daily.
Milk diet.

24*th.*—Bowels moved several times, stools semifluid, yellowish feculence, very slightly tinged with blood. Pain in rectum and straining still severe. Tongue dusky, moist; pulse 90, soft, moderately full; skin cool.

To take a dose of Tinct. Opii. now,
And a bolus of ʒ ss. Pulv. Ipecac at 10 A.M.

Vesperi.—Still suffering in the same way.

Repeat the dose.

25*th.*—Had much pain in the night and did not sleep. Bowels moved very frequently but scantily, no blood. Tongue clean, pulse soft, weak. Complains of a sense of weight, and as if a large ball were lodged in the rectum.

℞. Olei. Ricini ℥ i. directly.

26*th.*—Slept badly. Oil acted frequently but stools very scanty, with a little blood. Has very severe pain in the rectum and much tenesmus. Tongue clean, pulse 80, small and soft; skin warm.

Ipecac. and Opium enema directly.
℞. Liq. Ammon Acet. ʒ ss.
— Quinæ Amorph. ♏ xv.
Mist. Camphoræ ℥ i. *M.* thrice.

Vesperi.—The quinine was prescribed as it appeared that there was a periodicity in his disease;—the purging being generally at night. Is feeling very unwell from pain and want of rest.

Two grains of opium as a suppository.

27*th.*—Slept well for four hours. Bowels moved frequently since 2 A. M. No blood in the stools, which consist of semifluid brown feculence. Says he has prolapse of the rectum every time he goes to stool. There is much firmness around the anus as if the bowel were thickened. Tongue clean; pulse 80, soft.

℞. Tinct. Benzoini Co. ♏ xv.
— Camphoræ c̄ opio ʒ i.
— Kino Co. ʒ ss.
Syrupi ℥ ss. every four hours.

28th.—Better, less pain and straining. Three stools, less relaxed.

Continue.

30th.—Doing very well, but feels weak. Pain much less, puts on quite a pleased expression now. Pulse 74, small and soft; bowels moved twice, character of stools much improved.

Continue.

Low diet. 4 oz. Sherry.

1st November.—Improving steadily. Scarcely any pain in rectum. Bowels still relaxed three or four times early in the morning.

Repeat mixture.

℞. Quinine Disulph. gr. v. in pill with each dose.

2nd.—Doing well. No complaint except that he had three stools.

Repeat.

4th.—Improving. Continue.

6th.—Says he is quite well. One stool, relaxed. Continue.

10th.—Has a relapse. Had a great deal of straining and pain in rectum last night. Bowels moved very frequently but scantily, a little blood in the stools.

Continue mixture and Pills.

An Ipecac. and Opium enema at bed time.

11th.—Less pain, but bowels moved very frequently and the prolapse of the rectum has recurred. Tongue clean; pulse of fair strength.

Repeat.

Add Alum gr. v. to enema and give twice a day.

13th.— Doing well, bowels moved less frequently; stools feculent, semi-consistent. No pain in rectum. Tongue clean. Pulse soft and full.

Omit medicine.

Repeat Enema morning and evening.

14th.—Improving. Stools half formed, healthy.

Continue.

15th.—Says he is quite well, but feels a little weak.

Full diet. No medicine.

16th.—Bowels moved several times last night, some pieces of undigested meat and potatoes in stool.

To have a dose of oil.

17th.—Oil acted well. Feels weak but otherwise well.

To have tonic doses of Quinine.

18th.—Feels well.

20th.—Quite well. Discharged.

No. VII.—J.B., Seaman, unemployed. Aged 21 years. A German of leucophlegmatic temperament, and temperate habits.

25th October 1865.—Transferred from the Surgical ward with Dysentery. Bowels moved several times, stools healthy feculence, partially covered with mucous tinged with blood. Says he has much tenesmus and pain in rectum when at stool. No abdominal tenderness.

Milk diet.
An Ipecac and Opium enema directly.
℞. Olei Ricini ℥ i. in an hour's time.

26th.—Slept well. Bowels not moved so frequently, stools relaxed from the oil, a little blood. Pain and tenesmus continue. Had a febrile attack last night. Lately suffered from quotidian fever. No hepatic or splenic enlargement.

℞. Tinct. Benzoini Co. ♏ xv.
——Camphora c̄ Opio ʒ i.
Liq. Quinæ amorph ♏ xv.
Syrup ℥ ss. thrice daily.

27th.—Says he feels better. Had an Ipecac enema last night. Bowels moved nine times, stools formed healthy feculence, not scybalous, followed by a small quantity of mucus and blood. Has been examined for hæmorrhoids and has none. Tongue partially covered with a yellowish fur. Pulse very soft.

Continue medicine.

28th.—Much the same, but has less pain in rectum. Nine stools of same character. Tongue pale and expanded. Pulse feeble.

Continue. Repeat enema.

30th.—Feels much better. Slept well. Bowels less frequently moved, no blood. Tongue same. Pulse 90, soft, of fair strength.

Repeat.

1*st November.*—Was not so well last night, and had two scruples of ipecac in bolus. Bowels moved several times, stools contain some blood. The ipecac sickened him, and he is feeble this morning.

℞. Pil. Hydrargyri gr. iii.
Pulv. Ipecac. gr. ii. *M.* ft. pil. thrice daily.
℞. Ext. Opii. gr. ii.
Zinci Sulph. gr. x.
Aquæ ℥ iii. *M.* ft. Enema.
To be given at bedtime.
Low Diet.

2*nd.*—Doing well. Says he is much improved. Bowels moved thrice, healthy feculence, with just a trace of blood. Tongue and pulse normal.

Continue.

3*rd.*—Very much improved. Bowels moved naturally once.

Omit medicine. Half diet.

4*th.*—Discharged at his own request.

No. VIII.—R. W., Student Civil Engineering College. Age 18 years.

A European of phlegmatic temperament, and temperate habits.

27*th November* 1865.—Admitted complaining of feeling very weak and ill from dysentery. Bowels moved frequently in the day, with much pain and straining. Stools semifluid, with a little blood and exudation shreds.

Has pain on pressure in the left iliac region. Tongue a little furred; pulse soft, full; skin warm.

Milk diet. Ipecac. ℈i. in bolus, now.

28*th.*—Says he feels much better. Bowels moved three times; stools relaxed, but otherwise natural. No pain. Tongue and pulse normal.

Full diet. No medicine.

29*th.*—Well. One natural stool.

30*th.*—Quite well. Discharged.

No. IX.—D. M., Seaman, aged 31 years.

A stout, able-bodied Swede, of sanguine temperament and abstemious habits.

13th December 1865.—Admitted last evening with acute dysentery of four days duration. Has had numerous stools containing large quantities of blood and mucoid exudation, passed with much griping and straining. Tongue foul, red-edged; pulse 110, full; skin hot and dry. Has no appetite and feels very weak.

Spoon diet. A large warm water enema directly.
℞. Ipecac. ʒ ss. in bolus preceded by Tinct. Opii. ♏ xx.
Sinapism to abdomen.

14th.—Vomited several times after the ipecac. The pain is not so severe, nor the calls to stool so frequent, but he is still passing large quantities of blood and albuminous exudation. Has still a good deal of febrile heat.

Turpentine stupes to abdomen.
Repeat Ipecac. ʒ ss. now.
Ipecac. and Opium enema at bedtime.

15th.—Very much nauseated, but feeling much better. Free from fever. Evacuations less frequent, more feculent, small quantity of blood. Pulse 80, soft; tongue clean.

℞. Pil. Hydrargyri gr. iii.
Pulv. Ipecac. gr. ii.
Pulv. Ipecac. c̄ Opio. gr. v. *M.* ft. Pil. ii. thrice.
℞. Tinct. Opii. ♏ xxx.
Mist. Camph. ℥ iss. at bedtime.

17th.—Much better, stools becoming formed, free from blood.

No medicine. Half diet.

20th.—Not quite so well. Is griped occasionally, and the stools are again loose and mixed with blood and mucus.

Ipecac. and Opium Enema at once.
℞. Tinct. Benzoini Co. ♏ xx.
— Opio. ♏ x.
— Kino. Comp. ʒ i.
Mucilaginis Acaciæ ʒ ii.
Aquæ Cinnamomi. ℥ iss. *M.*
every four hours.

23rd.—Better, but still relaxed and passes some mucus and blood if he omits the medicine.

Continue mixture twice a day.

27th.—Is much better, but occasionally is slightly purged. Thinks meat disagrees with him.

Soup diet. Continue mixture.

30th.—Doing well. Stools relaxed but otherwise natural. Appetite indifferent, suffers from flatulence after eating. Tongue expanded, pale; pulse soft, weak.

Low diet with pudding.
℞. Acidi Nitro-Hydrochlorici Diluti. ♏ x.
Tinct. Opii. ♏ x.
— Kino. Co. ♏ xxx.
Infusi Chirettæ ℥iss. *M.* thrice daily.

3rd January 1866.—Is daily getting stronger and better. Appetite improved. Bowels inclined to be relaxed.

Continue.

7th.—Well, but a little weak.

Omit Opium and Kino. Continue Acid and Chiretta.

15th.—Quite well. Discharged.

No. X.—R. B., Mate of a ship, age 34 years.

A moderately stout man, of sanguine temperament, and temperate habits. Generally enjoys good health.

16th December 1865.—Admitted yesterday evening complaining of having suffered for the last five days from dysentery. Has very frequent calls to stool, with severe griping and most distressing tenesmus. Evacuations consist of little else than blood and mucoid exudation. Pulse 100, full and firm; tongue foul and red-edged; skin hot and dry; urine scanty and high coloured. Says his disease was caused by " very bad food."

Farinaceous diet. Hot bath.
Bolus of Ipecac. ʒss. preceded by Tinct. Opii. ♏ xx.
Turpentine stupes to abdomen.

17th.—Says he feels much the same. Still has some febrile action, but the skin is moist. Emesis profuse after the bolus. Stools of same character.

Repeat Ipecac. twice, and Turpentine stupes.

18th.—Had frequent calls to stool yesterday, but passed no feculent matter whatever, nothing but " slime and blood." Has less griping and straining. Pulse 84, soft; tongue still foul; urine free.

℞. Olei Ricini. ʒvi. directly.

19th.—Oil has acted freely; stools free from blood and mucus, frothy, fermenting and deficient of bile. Tongue cleaner.

℞. Pil. Hydrargyri gr. iii.
Pulv. Ipecac. c̄ Opio. gr. v. *M.*
ft. Pil. ii. to be taken thrice.

20th.—Very much improved. Stools three, semiconsistent feculence.

Continue.

21st.—Says he is well and wants to rejoin his ship. Bowels regular. Appetite good. Has some pain in epigastrium with flatulent distention of the bowels.

℞. Rhei Rad. Conrit. ℈ i.
Soda Carbonatis gr. xv.
Pulv. Zingiberis gr. x.
Aquæ Cinnamom ℥ iii. M̄.
to be taken directly.

22nd.—Draught acted twice. Says he is quite well, and is so anxious to repair to his duty that he is discharged.

No. XI.—C. T., Seaman, aged 25.

An Englishman of sanguine temperament, and temperate habits.

18th December 1865.—Admitted at noon complaining of having intermittent dysentery for the last fortnight. Some days his stools are natural and on other days (not regularly alternating) they consist of nothing but "blood and slime," when he has severe griping and straining. Has not had any fever. Pulse and skin, normal; tongue foul.

Milk Diet.

℞. Ipecac. ℈ ii. in bolus preceded by Tinct. Opii. ♏. xx.

19th.—No better. Vomited once after the Ipecac, and had profuse diaphoresis. Several stools containing scybalæ and mucoid exudation in large quantity but with little blood.

Repeat Ipecac directly and again in six hours.
Large warm water enema.

20th.—Felt much relieved after the second dose. Stools very copious, semifluid and frothy, with a spec of blood here and there. Tongue cleaning. Has some griping pain in the colon.

℞. Pulv. Ipecac. c̄ Opio. gr. vi. thrice daily.

22nd.—Doing well. Two stools yesterday, more natural. No tenesmus, but a sense of weight in the left iliac fossa. Tongue clean and moist; pulse, soft and full.

Low diet.

℞. Olei. Ricini ʒvi.
Tinct. Hyosyami ʒss.
Aquæ. Menth. Pip. ℥iss *M.* directly.

24th.—Improving. Oil acted well. Stools healthy. No pain.

27th.— A slight relapse. Three stools containing a little gelatinous mucus.

Repeat Oil.

30th.—Well since last report until to-day; has had four stools this morning with much griping and straining.

Ipecac. and Opium Enema.
Repeat Oil.

2nd January 1866.—Better. Two stools this morning with slight straining.

Repeat the Oil.

3rd.—Bowels moved thrice by the medicine. Stools fermenting. Otherwise says he is well.

℞. Pulv. Ipecac. c̄ Opio. gr. v. every four hours.

5th.—Was well yesterday and put upon half diet without potatoes, and the medicine discontinued. Has had several stools this morning slightly tinged with blood. Slight tenesmus. Pulse full and firm; tongue clean. At his own request the oil is repeated.

7th.—Doing well. Bowels steady. No medicine. 2 oz. sherry twice a day.

9th.—Well up to this morning. Has had two stools relaxed and slightly tinged with blood. Is much griped and complains much of tenesmus. Says his appetite is good and he wants more food.

℞. Mixturæ Acaciæ ℥ii.
Olei. Ricini ʒii.
Tinct. Opio. ♏ xx. *M.*
A fourth part every three hours.

11th.—The oil mixture has much relieved him. Bowels more steady.

Omit medicine.

13th.—Slept indifferently and is looking distressed. Three stools in the night. Still complains of tenesmus.

℞. Tinct. Kino. Co. ʒ i.
— Benzoini Co. ♏ xv.
— Opii ♏ x.
Liq. Quinæ Amorph. ♏ xv.
Mist. Acaciæ ℥ i. *M.* thrice daily.

15th.—Improving. Very little griping. Continue.

19th.—Had a relapse on the 16th and again yesterday. Has much pain and fullness about the lower part of the rectum.

Continue mixture.
Ipecac, Opium and Alum injection.

21st.—Quite well yesterday; to-day has had three stools with much griping.

Continue mixture.

24th.—Improving steadily. Stools natural but slightly relaxed; no blood or mucus. Now free from straining and griping. Begs that his mixture may be continued.

Full diet.

29th.—Well up to yesterday, when he was called to stool frequently, and had much straining and pain. Is better now, but has just had one stool containing a little blood. Complains of flatulence.

Ipecac ℈ i. in bolus, preceded by Tinct. Opii. ♏ xx.

30th.—Has felt very well since he took the Ipecac. Had two copious stools, free from blood.

℞. Infusi Chirettæ ℥ iss.
Sp. menthæ Pip ♏ v. *M.* thrice.

31st.—Says he is well. Bowels steady; sleeps well. No griping or flatulence. Appetite good.

Continue.

2nd February.—Quite well. Discharged.

No. XII.—E. S., a Seaman, aged 19.

A robust, well-built English lad, of sanguine temperament and steady habits.

20th December 1865.—Admitted complaining of dysentery of a week's duration. Is very frequently purged, evacuations consisting almost entirely of "blood and slime." Has very distressing tenesmus, but no tormina. Has slight fever at times. There is much tenderness on pressing in the left iliac fossa. Pulse, 100, full and firm. Tongue very foul. Skin warm and dry. Appetite bad. Urine free.

Milk diet.
Sinapisms to abdomen.
Ipecac. ʒ ss. in bolus directly.
Pulv. Ipecac. c̄ Opio. gr. xv. at bed time

21*st.*—Much better. No emesis. Four stools since taking the Ipecac; they are copious, semifluid, dark, and contain some blood, mixed with exudation shreds. Slept pretty well. Tenderness of abdomen less. Still some straining. Has slight febrile action.

Repeat the Ipecac.
Foment abdomen assiduously.

22*nd.*—Vomited frequently yesterday and perspired profusely. Bowels moved several times, evacuations semifluid, pale, frothy feculence, with very little blood and exudation. Says he has no pain and feels very much better. No fever.

℞. Pil. Hydrargyri gr. iv.
Pulv. Ipecac. c̄ Opio. gr. v. *M.*
ft. Pil. ii. thrice daily.

23*rd.*—Very much improved. Stools almost natural.

Continue. Low diet.

25*th.*—Bowels a little relaxed, evacuations very dark and frothy. Has no pain. Appetite voracious. No fever.

℞. Acidi. Nitro Hydrochlorici Diluti ♏ x.
Tinct. Kino. Co. ʒ ss.
Aquæ font. ℥ iss. *M*. thrice.

29*th.*—Daily improving. Evacuations still dark, and a little relaxed.

Continue.

1*st January* 1866.—Doing very well. No medicine. Full diet.

4*th.*—Quite well. Discharged.

No. XIII.—*Acute Dysentery complicated with Peritonitis.*

G. O. E., an East-Indian Pauper, aged 26 years.

A miserable, much emaciated man, very much debilitated by long continued syphilitic rheumatism.

17*th September* 1865.—Admitted last evening complaining of very severe pain in the abdomen, with frequent calls stool with very much tenesmus. Said his evacuations nsisted of nothing but blood and mucus. Had been ill out a week. The Apothecary on duty ordered a rhubarb aught and fomentation to the abdomen.

This morning he is looking very ill. Has a pinched, drawn untenance, sunken eyes, and his nostrils expand and conact freely. He lies in bed with his legs drawn up and his oulders raised, and his respirations are very shallow. Comains of severe pain all over the abdomen, and shrinks at the proach of the hand. Pulse rapid, very small and somewhat rd. Tongue slightly coated, dirty white, red at tip. Skin oderately warm and dry. Has had several small stools, hich are yellow, semifluid and bilious, but contain no ood.

Milk diet.

Sherry ½ oz. every two hours.

℞. Pulv. Ipecac. c̄. Opio. gr. v. every four hours.

A large piece of spongio-piline to be wrung out of hot ater moistened with ½ oz. Tinct. Opii. and applied to the domen.

18*th.*—Slept badly. The pain in the abdomen continues uch the same. Bowels moved four times scantily, a little ood and mucus.

His posture is the same but he looks less anxious. Pulse ry small and feeble.

Milk and mutton broth at short intervals.

Sherry ½ oz. in the broth every two hours.

Repeat powder every three hours.

Continue Opiate Epithem.

19*th.*—Much the same. Pain in abdomen very slightly tter. Slept a little. Bowels moved four times, stools clayloured, devoid of bile, no blood. Tongue pale, flabby, oist. Pulse, 110, very weak. Skin dry.

℞. Podophyllin gr. i. directly.

Continue diet as yesterday.

℞. Ext. Opii. gr. i. every four hours.

20*th.*—Slept soundly. Pain in abdomen much diminished. llows of palpation now, but is exquisitely tender. Was leep with his legs extended this morning. Bowels moved vice, semifluid, but otherwise healthy. Tongue red at tip, ul at base. Pulse 100, weak and small. Skin warm and ore moist.

Continue diet. Omit opium till evening.
℞. Ext. Opii. gr. i at 5, 8, and 10 P.M.

21st.—Had a very bad night. Says the pain in abdomen was very severe, but is relieved now. Looks better and breathes more deeply. Bowels moved thrice, stools semi-fluid, yellowish. Tongue cleaning. Pulse soft and more full.

Continue diet.
Large sinapism to abdomen.
℞. Ext. Opii. gr. i. 6 times in the 24 hours.

22nd.—Improving steadily. Pain in abdomen decreasing, lies almost straight now. Bowels steady. Tongue clean. Pulse of better volume and strength.

Continue all.

23rd.—Slept well. Pain much less. Is rapidly improving, wants some meat. Tongue clean. Pulse soft, weak. Bowels moved thrice, evacuations natural.

Continue opium every six hours.

25th.—Doing well. Pain nearly gone. Bowels moved twice, stools semi-consistent, yellow feculence. Got out of bed and walked to the retiring room. Tongue clean. Pulse of fair strength.

Continue Opium twice a day.
Low diet with custard.
Sherry 6 oz. during the day.

27th.—Is well but very weak. Has no pain or tenderness. Bowels natural. Takes a little walk every day.

℞. Acidi. Nitrici Diluti ♏ xv.
Infusi. Chirettæ ℥ ii. M. thrice daily.

29th.—Doing very well. Wants more food.

Half diet without potatoes.
Sherry 6 oz.
Continue mixture.

1st October.—Quite as well as he ever will be.

3rd.—Says he is quite well. Discharged.

No. XIV.—*Case of Peritonitis Chronica.*

W. L., a European, Pensioned Private, aged 47 years.

A well nourished man of sanguine temperament and temperate habits.

22nd November 1865.—Admitted last night, complaining of severe pain in centre of abdomen. Said he had had fever for several days; and had pains all over the body, which he attributed to exposure to cold and wet. Tongue thickly coated at base but clean at edges and tip, moist. Pulse soft and weak. Bowels not moved for two days. The Apothecary on duty gave him ½ oz. of Tincture of Hyoscyamus last night and a drachm of compound Jalap powder this morning.

Beef-tea diet.

23rd.—The powder has not acted. Feels very unwell; has very urgent thirst. Pulse, soft, and weak. Tongue dry, and covered with a brown fur in the centre. Urine normal. Says he has scarcely any pain in the abdomen. Walks about the ward.

℞. Liq. Ammon. Acet. ʒ iii.
— Quinæ. Amorph. ♏ xv.
Tinct. Camph. c̄ Opio. ♏ xxx.
Mist. Camphoræ. ℥ i. *M.* thrice daily.

24th.—Bowels moved very freely. Tongue cleaner but still dry. Pulse, 90; of better strength. No fever. Less pain in abdomen. Bears palpation well, but has tenderness over the ascending colon. Appetite very bad. Urine scanty. Skin dry but soft.

Beef-tea diet with a pint of milk.

℞. Potassæ Nitratis gr. v.
Liq. Ammon. Acet. ʒ iv.
Aquæ font. ℥ iss. *M.* thrice.

25th.—Says he feels much better, and is *quite free* from pain. Looks a little exhausted. Pulse very small, rather firm. Tongue cleaning, more moist.

℞. Tinct. Cinchonæ Co. ʒ i.
Liq. Ammon Acet. ʒ iii.
Aquæ font. ℥ i. *M.* thrice.

1. P. M.—Sent for to see this patient; found him restless, and screaming with very severe pain in the bowels. Thinks the medicine disagreed with him, for, soon after taking it, felt a burning pain all over the abdomen. Is vomiting frequently, the ejected matter being a thick, ropy, green fluid. Pulse fluttering. Skin cold and covered with a clammy sweat. Diagnosis, perforation of intestine.

Sinapism to abdomen.
Tinct. Hyoscyami ʒ ss. directly.
Arrack ℥ ss. with water every hour.

5 P. M.—Sinking. In great agony. Pulse imperceptible.

Bran poultice to abdomen.
A stimulant dose every half hour.

Continued to suffer great agony, and expired at midnight.

Autopsy at 8-30 a. m. *26th November.*

Body stout and well nourished—sugillation of the sides and back of both trunk and extremities.

Abdomen, subcutaneous areolar tissue loaded with fat. Muscles of a very deep red color. Upon opening the peritoneum a quantity of thin opaque purulent fluid flowed out. The parietal peritoneum generally inflamed and in the iliac fossæ deeply purple. The great omentum loaded with fat, and slightly adherent to parietes. Upon attempting to raise it, it was found firmly adherent in the right iliac fossa and in fact all along its right border. It separated on gentle traction and a large quantity of pus followed—the separated edge was *in a state of sphacelus.* There was one sloughy spot also on the under surface of the great omentum and corresponding to this was a small cavity—the other wall of which was formed by a fold of intestine which was curved upon itself, adherent, and the peritoneal coat broken down into a slough.

Upon removing the small intestines it was found that the mesentery was very loaded with fat, that the peritoneal surface of the bowels was generally slightly inflamed, that lymph was poured out upon it, and had produced easily broken down adhesions between neighbouring coils. The cœcum and ascending colon were very much congested and of a deep purple colour and covered with flocculi of lymph; along the outer border was a line of sloughy tissue corresponding to the adhesion of the great omentum, and upon following this upwards and separating the right upper-border of the omentum (which was firmly adherent in the right hypochondrium) a large abscess was opened, the upper boundary of which was formed by so much of the under surface of the right lobe of the liver as lies right of the gall-bladder, the external boundary being the abdominal parietes external and superficial to the colon, and the internal boundary the edge of the great omentum. The pus had escaped into the general peritoneal cavity through a circular opening near the inferior portion of the abscess. The inflammation was confined to the peritoneum, the mucous coat of the intestines was healthy and the capsule of the liver unaffected. *Kidneys* large, lobulated, soft; right, of deeper colour than natural and very watery; left, purple and highly congested.

EOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of January,* 1866.

	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed extremes.		Daily means.						
	Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
s.	°	°	°	°	per cent.		Mls.	Ins.	
7	82·2	72·6	77·0	69·8	70	N.E.byE.	250	.....	Passing clouds.
5	81·8	72·0	76·9	69·3	·69	E. N. E.	246	....	Fine.
4	81·7	73·3	76·0	69·1	71	E. by N.	156	....	Chiefly fine
5	80·8	67·8	74·5	68·0	72	N.E.byE.	110	.....	Do.
5	80.7	67·7	75·1	69·0	74	E. N. E.	101	....	Fine, with passing clouds.
0	81·5	67·7	75·0	69·0	74	E.	98	......	Fine.
2	80·6	67·7	74·9	69·7	77	E. by N.	98	......	Chiefly fine.
7	81·3	68·9	76·5	70·8	76	E. N. E.	154	....	Fine, with passing clouds.
8	80·8	68·9	77·0	69·6	70	E. N. E.	199	....	Clear day: cloudy night.
8	81·7	71·2	75·9	68·0	67	N.E.byE.	216	....	Fine, with occasional clouds.
8	80·6	67·1	74·8	65·7	63	N. E.byE·	161	....	Chiefly fine.
8	79·5	67·0	74·6	65·8	64	N.E. byE.	109	....	Fine day: cloudy night.
4	79·8	70·0	75·5	6·63	62	N.E.byE.	130	....	Cloudy, with fine intervals.
5	82·2	70·0	75·2	67·8	69	N. E.	157	....	Passing clouds: clear night.
2	81·5	69·4	76·1	70·8	78	N. E.	175	....	Fine.
9	80·0	69·9	73·8	68·8	78	N. E.	147	....	Do.
2	81·3	65·8	73·3	67·6	75	E. N. E.	66	....	Do.
0	81·3	64·8	72·6	67·6	78	E. S. E.	65	....	Do.
6	82·0	65·8	73·1	68·6	80	S.E.byS.	74	....	Do.
4	81·9	65·9	73·6	69·0	80	S. S. E.	87	....	Do.
1	81·4	65·1	73·4	68·7	79	S.E.byE.	86	....	Do.
4	81·1	66·6	74·6	68·7	74	E.	96	....	Do.
0	81·5	67·6	74·8	69·7	78	E. by N.	112	....	Fine, with passing clouds.
1	82·4	69·7	74·9	68·3	72	E. N. E.	146	....	Chiefly fine.
5	81·1	67·5	74·4	68·1	73	E. N. E.	137	....	Fine.
0	81·0	65·9	74·4	68·0	73	E. N. E.	119	....	Do.
6	81·4	66·8	75·0	69·7	77	E. by E.	127	....	Do.
3	80·9	67·5	75·1	67·9	70	E.	118	....	Chiefly fine.
2	82·3	66·4	74·5	69·9	81	E. by S.	91	......	Do.
7	82·8	66·3	75·3	70·2	79	S.E.byS.	133	....	Fine, with passing clouds.
1	83·9	69·7	71.4	73·2	82	S.E. byS.	163	......	Do.

andard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., ily Means are obtained by the application of hourly corrections, deduced from rs' observations. The Cistern of the Barometer is 27 feet above the level of the e Receiver of the Rain-gauge is three feet from the ground. The Wind and *ered are for the current civil day*—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of February,* 1866.

February 1866.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.			Prevailing direction.	Daily velocity.		
		Maxim.	Minim.	Dry.	Wet.					
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1st	29·941	85·5	72·1	78·4	74·2	82	S. S. E.	144	....	Fine, with passing clouds.
2nd	29·938	85·9	73·2	79·2	74·6	81	S.E. by S	144	....	Do.
3rd	29·888	86·0	73·1	80·0	73·9	76	S. S. E.	144	....	Passing clouds.
4th	29·809	90·8	73·9	79·7	74·6	80	S.	189	....	Fine.
5th	29·815	88·8	75·9	80·1	72·7	71	S.E. by S.	145	....	Fine, with passing clouds.
6th	29·896	87·9	72·8	80·1	74·2	76	S. by E.	144	....	Do.
7th	29·959	86·6	73·2	80·0	73·7	75	S. S. E.	137	....	Do.
8th	29·964	85·2	72·6	79·4	73·2	75	S. E. by S	109	....	Do.
9th	29·972	84·5	71·7	79·1	72·9	75	E. S. E.	128	....	Do.
10th	29·978	85·5	71·8	78·8	75·4	85	E. S. E.	133	0·21	Showers at 7½ and 8½ A.M. Passing clouds.
11th	29·963	86·3	75·9	81·0	75·3	77	S.E. by S.	177	....	Fine, with passing clouds.
12th	29·933	86·4	74·8	81·0	75·0	76	S.E. by E.	131	....	Do.
13th	29·964	85·2	75·0	80·0	74·6	78	E.	120	....	Chiefly fine.
14th	29·95	85·4	73·8	80·1	72·9	71	E.	125	....	Do.
15th	29·960	84·5	72·7	78·5	71·4	72	E.	115	....	Fine.
16th	29·943	83·7	70·7	78·5	71·3	71	E.	111	......	Fine, with passing clouds.
17th	29·939	83·7	69·9	77·6	69·6	68	E. by S.	97	....	Fine.
18th	29·957	84·5	71·6	77·6	69·2	66	E. S. E.	94	....	Do.
19th	29·956	83·0	70·8	77·4	67·5	60	E. by S.	97	.....	Passing clouds.
20th	29·957	84·1	71·6	76·7	67·3	62	E.	95	......	Fine.
21st	29·944	84·4	67·7	76·5	68·9	69	E. by S.	79	....	Do.
22nd	29·921	83·7	67·3	76·2	71·0	78	E. by S.	93	....	Do.
23rd	29·949	84·0	68·9	78·4	72·2	74	E.	115	....	Chiefly fine.
24th	29·974	84·4	70·9	78·2	70·6	69	E. by N.	117	....	Fine, with passing clouds.
25th	29·964	84·7	70·6	78·1	69·4	65	E.N. E.	158	....	Fine.
26th	29·926	83·3	71·2	75·9	68·1	68	N.E by E.	102	....	Do.
27th	29·922	83·4	65·2	74·0	67·7	73	E. by N.	73	....	Light clouds.
28th	29·914	84·8	64·5	76·6	71·7	79	E. S. E.	100	....	Fine.

The Standard Barometer and Thermometers are read at 10 A. M., 4 P. M., and 10 P. M., and the Daily Means are obtained by the application of hourly corrections, deduced from twenty years' observations. The Cistern of the Barometer is 27 feet above the level of the Sea, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and *Rain registered* are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

)ROLOGICAL RESULTS *from the Madras Observatory Register, for the month of March,* 1866.

Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
Observed extremes.		Daily means.			Prevailing direction.	Daily velocity.		
Maxim.	Minim.	Dry.	Wet.					
°	°	°	°	per cent.		Mls.	Ins.	
86·7	69·4	76·7	71·1	77	S.E.by S.	121	....	Fine.
85·8	66·6	76·0	70·0	75	S.E. by S.	120	.....	Do.
86·6	66·7	77·8	71·6	74	S. S. E.	140	....	Do.
88·5	70·9	78·8	73·9	79	S. byE.	137	....	Chiefly fine.
87·0	72·4	78·8	73·0	77	S. S. E.	156	....	Do.
86·7	68·6	77·6	71·5	75	S. by E.	135	....	Fine.
87·7	69·1	79·4	73·0	74	S. S. E.	157	....	Do.
87·5	72·0	80·9	74·4	74	S.E. byS.	169	....	Chiefly fine.
88·5	72·9	81·6	76·0	78	S. S. E.	172	....	Fine.
88·7	73·8	80·8	74·0	73	S.E. byS.	157	....	Passing clouds.
87·2	69·9	79·1	73·2	76	S.E. by S.	164	....	Chiefly fine.
88·2	72·9	80·5	74·0	74	S.E.by S.	150	....	Passing clouds.
89·0	71·7	79·5	73·3	75	S.E.by S.	104	....	Fine.
88·6	69·8	78·6	72·8	77	S.E. by S.	109	....	Do.
89·8	69·5	79·7	73·3	74	S. S. E.	128	....	Light haze.
88·5	72·3	80·9	76·0	80	S. S. E.	199	....	Do.
90·4	73·5	81·4	76·8	82	S. by E.	186	....	Hazy.
89·1	75·7	82·7	77·1	78	S. by E.	205	....	Thick haze.
88·8	74·3	81·6	75·8	77	S. S. E.	154	......	Hazy.
90·4	74·2	81·5	76·1	78	S. by E.	150	.. ..	Do.
88·5	74·3	81·8	76·0	77	S. S. E.	179	....	Fine.
92·2	74·6	82·7	76·7	77	S. by E.	110	....	Do.
92·6	78·3	83·4	77·5	77	S. by E.	252	....	Chiefly fine.
90·8	76·4	83·3	76·7	75	S. S. E.	248	....	Do.
90·9	74·0	82·7	76·8	77	S. by E.	238	....	Fine
90·9	75·3	83·4	76·5	73	S. S. E.	219	....	Chiefly fine.
94·1	75·9	83·7	76·6	73	S.	238	....	Fine.
90·6	76·6	83·7	78·4	79	S. S. E.	254	....	Light clouds.
90·0	78·6	83·2	77·0	76	S. E. by S.	255	......	Passing clouds.
89·1	76·2	82·8	75·7	73	S. E. byE.	163	....	Chiefly fine.
90·2	75·6	83·0	77·9	80	S. E.	188	... ...	Ditto.

dard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., Means are obtained by the application of hourly corrections, deduced from observations. The Cistern of the Barometer is 27 feet above the level of the *Receiver of the Rain-gauge* is three feet from the ground. The Wind and *l are for the current* civil day—from midnight to midnight.

N. R. POGSON Government Astronomer.

PART IV.

MEDICAL INTELLIGENCE.

The Army and Navy Medical Services.

We extract the following from *The Lancet* of the 24th February, and 3rd March last:—

"The Report of the Committee appointed to inquire into the whole question of the Rank, Pay, and Position of Medical Officers of the Army and Navy is now before us. Together with the minutes of evidence and appendix of documents, it forms a volume of 213 pages. We shall content ourselves this week with stating its principal recommendations.

For the Army the Committee recommend—

1. That at all boards upon which army medical officers may be summoned as members, they should sit and take precedence according to their relative rank, and should preside, if senior in relative rank to the combatant officers, with the exception of courts-martial and courts of inquiry on military offences.

It is, however, suggested, for the consideration of the authorities, whether it is not advisable to establish regulations for referring all necessary questions to medical officers for their opinion and report, and to discontinue the system of mixed boards.

2. With the view of preventing misunderstanding as to relative rank at mess:

That invitations sent by the colonel, or officer command-*ing, in the* name of himself and the officers of a regiment, be considered official, and that the senior combatant officer present should always preside ; and

That where a second position is formally assigned on such occasions, such position should be determined by relative rank, as defined by the Queen's Regulations and Warrants ; we consider, however, that no second place should be recognized.

3. That in the Monthly Army List, the names of the medical officers of each regiment be inserted above those of the other regimental staff, with a heading of "Medical Officers."

Also, that a general list of all medical officers in the army be inserted in the Monthly Army List, and that in such list the relative rank of each class of medical officers with the corresponding rank of combatant officers should be clearly stated; thus:

Inspectors-general of hospital (ranking with major-generals.)

Deputy inspectors-general of hospital (ranking with colonels), &c.

And that opposite the name of each officer should be the number of his regiment or the station in which he is serving.

That medical officers be re-placed in the list of the regimental staff in the classification of officers in the Queen's Regulations ; and it is submitted for consideration whether the Medical Department should not be placed immediately after the lists of combatant officers in the Army List.

4. That medical officers, ranking with field officers and being allowed forage, should be ordered to provide a charger and to appear mounted on parade.

5. That increase of pay and earlier retirement be granted as defined in paragraphs Nos. 9, 10, and 11.

9. In view of the proper requirements of the service in this regard, and in order to encourage the coming forward of a larger number of the most eligible class of candidates, and thus to render the competitive examination really worthy of that name, and such as was contemplated upon its establishment, the Committee, from the information before

them, and supported by the deliberate opinions of gentlemen of the highest professional attainments and experience connected with the medical schools of London, who have been examined, consider that, besides the removal of the alleged grievances of medical officers above referred to, a certain increase of pay is absolutely called for; and with this view, and after full consideration, they recommend that an increase of pay should be extended to medical officers in accordance with the annexed scale:—

SCALE OF PAY PROPOSED FOR ARMY MEDICAL OFFICERS.

RANK.	Under 5 years service.		Above 5 years service.		Above 10 years service.		Above 15 years service.		Above 20 years service.		Above 25 years service.		Above 30 years service.	
	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Assistant Surgeon	10 0	10 0	11 6	12 6	13 0	15 0	13 0	17 6‡	—	—	—	—	—	—
Surgeon...........	..	..	..	..	15 0	17 6†	18 0	20 0	—	—	—	—	—	—
Surgeon Major...	..	..	..	...	..	..	..	..	22 0	24 0†	25 0†	27 0	—	—

A proposal to increase the pay of the inspectorial rank was made, but the Committee, being divided in opinion, do not make any recommendation.*

10. The Committee also consider that the prospect of optional retirement at an earlier period that at present permitted would prove a further inducement to young medical men to enter her Majesty's service; they therefore recommend that army medical officers should be permitted to retire after twenty years' service on full pay; but at the same time, with a view to guarding the interests of her Majesty's service, they are of opinion that the rate of half pay awarded to officers so retiring should not exceed five-tenths of their full pay,† and that officers with this service should be permitted to retire on the present half pay of their rank, if, after one year on half pay, they are reported by a medical board to be permanently unfit for further service.

11. The Committee further recommend, that as a special reward to officers of long and good service, who, owing to.

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* The proposal was to increase the minimum pay of Deputy Inspectors-General to 30*s.*, after twenty-five years' service to 34*s.*, and after thirty years to 38*s.*, of Inspectors-general to 45*s.*, and after twenty-five years' service to 50*s.*

† As recommended to the Committee of the House of Commons in 1856, by Sir Andrew Smith, when Medical Director General of the Army.

the comparatively small numbers of the inspectorial ranks, have not been promoted to any higher position than that of surgeon-major, such officers, of the rank of surgeon-major, as have served for twenty-five years on full pay should, on being compulsorily retired at fifty-five years of age, receive the half pay of £1 a day, but such officers retiring voluntarily under fifty-five years of age should receive only seven-tenths of their full pay.

For the Navy, the Committee recommend—

1. That staff-surgeons be placed on a separate list, and considered as a distinct rank, and that promotion to that rank (although twenty years on full pay may not have been completed) should be open to officers for distinguished or special service.

2. That the whole time an assistant-surgeon serves on full pay should be allowed to qualify for the rank of staff-surgeon, provided he passes his examination for surgeon before he completes ten years' service.

3. To compensate the naval surgeon for loss of time, by his being placed on half pay, and unable to obtain employment, the surgeons and staff-surgeons' full pay should increase by periods of four years instead of five years as at present.

4. That naval medical officers be granted the same allowances at hospitals at home and abroad as the army medical officers, in respect to servants, fuel, furniture, or pecuniary allowances in lieu.

5. That the scale of travelling allowances, extra pay, lodging money, and compensation for losses, be fixed for naval medical officers according to relative rank.

6. With respect to the question of prize money, the Committee, owing to the present principle on which the Prize Proclamation is drawn, are unable to agree upon a special recommendation, but are inclined to the opinion that the share of medical officers should, after the officer in command of the ship, be regulated by relative rank.

7. That in regard to cabins, while the requirements of the service render it necessary that the senior executive officer and the staff commander or master should have the

cabins placed most advantageously for their special duties, medical officers should after them have cabins more in accordance with their relative rank in the service, and that cabins for all assistant-surgeons should be specially ordered to prevent future difficulties or neglect of the existing Admiralty Order.

8. That a staff-surgeon, ranking with commander, be allowed a servant.

9. That a staff-surgeon should be appointed to all flag-ships bearing the flag of a commander-in-chief on foreign stations, with an allowance of 5*s.* a day in addition to his established pay.

10. That the periods of retirement by age be fixed for staff-surgeon, surgeon, or assistant-surgeon at fifty-five years; inspector-general and deputy inspector-general at sixty-five years; but this regulation should only apply to new appointments.

11. That naval medical officers be considered equally eligible to honorary distinctions as army medical officers.

12. That they should have equal consideration for Greenwich Hospital pensions with other officers of the service.

13. That assistant-surgeons, after completing their time for examination for the rank of surgeon, be granted two months leave of absence on full pay, on the condition of their resuming their studies at a medical school or hospital.

14. That in order to place staff-surgeons on an equality in rank with surgeons-major in the army, they should rank with commanders by date of commission; but we are of opinion that officers in command of H. M. ships must on all occasions be considered senior in rank and precedence to all officers placed under their command, and that a ship, as a regiment, must always be represented by an executive or combatant officer, after whom all officers should take precedence according to the relative rank conferred on them by Royal Authority. See clause 10 of the Order in Council of 13th May 1859.

15. That the pay of the naval medical officers be increased in accordance to the following scale :—

SCALE OF PAY PROPOSED FOR NAVAL MEDICAL OFFICERS.

RANK.	Under 5 years.		Above 5 years service.		Above 10 years service.		Above 14 years service.		Above 18 years service.		Above 22 years service.		Above 26 years service.		Above 30 years service.	
	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.	Present rate.	Proposed rate.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Asst. Surgeon... ...	10 0	12 6	11 6	12 6	13 0	15 0	13 6	17 6*	—	—	—	—	—	—	—	—
Surgeon...	—	—	—	—	15 0	17 6†	18 0	20 0	18 0	22 0	—	—	—	—	—	—
Staff Surgeon......	—	—	—	—	—	—	—	—	22 0	24 0†	25 0	27 0	25 0	27 0	—	—
Depy. Inspr. Genl. of Hospl. & Fleets.	—	—	—	—	—	—	—	—	28 0	30 0†	30 0	32 0	30 0	35 0	34 0	37 0
Inspector. Genl. of Hospl. & Fleets..	—	—	—	—	—	—	—	—	—	—	40 0†	45 0	45 0	47 0	45 0	50 0

16. That, as a prospect of optional retirement at an earlier period than at present permitted would prove a further inducement to young men to enter her Majesty's service, naval medical officers should be permitted to retire after twenty years' service on full pay; but at the same time, in order to guard the interests of her Majesty's service, the rate of half pay awarded to officers so retiring should not exceed five-tenths of their full pay, and that officers with this service should be permitted to retire on the half pay of their rank, if, after one year on half pay, they are found on medical survey to be permanently unfit for further service.

17. That as a special reward to officers of long and good service, who, owing to the comparatively small numbers of the inspectorial ranks, have not been promoted to any higher position than that of staff surgeon, such officers of the rank of staff surgeon as have served for twenty-five years on full pay should, on being compulsorily retired at fifty-five years of age or retired on medical survey, receive the half pay of £1 a day.

We further recommend that competitive examination for admission of medical officers into the navy be established at Greenwich hospital, after the plan adopted in the army, at Chelsea, and that professional instruction by a course of lectures and attendance at Haslar be given to medical officers on first entry, in some measure on the system adopted at Netley Hospital.

Some of the medical witnesses have stated that it is desirable that naval boards of survey should be made purely medical boards as they are in the army; on this question, however, the Committee are not agreed, and therefore offer no opinion.

(Signed)

ALEX. MINE. H. B. PHILLIMORE.
DOUGLAS GALTON, W. O. MARKHAM.
JAMES B. GIBSON, D. G. GEORGE BUSK.
A. BRYSON.

Sir James Gibson protests against the greater favour shown to the navy by the above recommendations, and we fear that the army medical officers will not be satisfied with the terms of retirement, improved though they be. On the whole, however, we believe that these recommendations will be received with gratification, and certainly the services owe much

Dr. Markham and Mr. Busk for their careful and laborious
vestigation of the claims of the officers, and assiduous atten-
n to the duties of the Committee."—*The Lancet*, 24th
bruary 1866.

"The recommendation of the Committee on the Rank, Pay,
d Position of the Army and Navy Medical Officers, which
published *in extenso* last week, will, it must be hoped, be
rried out intact by the naval and military authorities. In
at case we should be able to recommend the services to the
udents in our schools as fulfilling in the most important
spects reasonable expectations. The concessions made are
considerable importance. They include nearly every point
rank, position, pay, and retirement which had been chal-
nged. Of course, even now the medical services of the
my and navy cannot be put in competition with the higher
izes of the profession, and the only prospect which they
fer is that of a certain competency and an honourable posi-
on. Considered in relation to the position of combatant
ficers, the pay and rank are both liberal; and we see no
ason why the services may not now expect a good supply
well-qualified men. It is very notable that the combatant
embers of the Committee have throughout shown a full and
ir appreciation of the just claims of the medical officers,
d there is every reason to believe that if Sir James Gibson
d honestly and boldly stated their case at the proper time,
e present interregnum of discontent would not have occur-
d."—*The Lancet*, 3rd March 1866.

The Report of the Committee at the Admiralty.

E take the following from the *Medical Times* and
azette of 10th March :—

No one can read this Report without perceiving that there
ust be something very defective in the relations of the central
edical with the executive authorities. Such appears to have
een the impression on the mind of one at least of the civil mem-
ers of the Committee, and this Report affords much corroboration
it. Whether this has arisen from want of power, or want of
ergy, on the part of the Medical authorities, we cannot say;
ut there is something very wrong somewhere in the working of

the Medical Services. There does not appear to be any—or, at any rate, any adequate representation of professional feeling.

For the last four or five years men have been appealing through the public press for a redress of many minor matters, which might have been adjusted by half-an-hour's conversation between the official Medical representatives and the Executives of the Horse Guards and Admiralty. Instead of this, things were allowed to take their course and acquire strength by doing so. Medical officers ought to repose the same confidence in their own administrators as the combatant officers repose in the Horse Guards and Board of Admiralty; but this is unfortunately not the case. There was no uniformity of regulation, and consequently no uniformity of action and custom. Warrants so loosely framed as to be capable of almost any interpretation; regulations, which ought to have been expressed with perspecuity, contradicting one another; and official memoranda at variance with all the rest! A Medical officer might find himself in *this* position to-day, and in *that* to morrow, according as he had a different commanding officer. Such a state of things strikes at the root of all discipline, and the combatant officer must often have been as fairly puzzled, and the consequence was, that matters were always "cropping up," every bit as distasteful to the Executive as to the Medical officer. Then, again, no end of very small difficulties and disagreeables were accumulating, of no earthly interest to one set of officers, but productive of injury and serious discontent to another. Had the representation of our professional instincts, feelings, and interests, been more firmly carried out, we must think the authorities would never have pursued so dangerous and suicidal a policy. If this has not been done, then the official representation is very ineffective.

This enquiry was not set on foot until grave injury had been done to the State. The end has been, that the Executive and Medical members of the Committee are unanimous in their Report. We learn that the Admiral presiding entered into and met all the grievances in a most considerate manner; and the other Executives conducted the investigation in as fair and impartial a spirit as was consistent with the interests they represented and had to protect.

Of course the Report is a compromise; but it is not the worse on that account. In dealing with the Army part of it, we could not avoid hitting off such a blot as the absence of promotion for the juniors. We were not singular in this, for almost all the witnesses examined represented the long continuance in a subordinate position as *the* grievance of the junior officers.

In the Naval service it is different. Promotion has been, and must continue to be for some time, much quicker. Still the Naval Medical Officers undoubtedly were worse off than their Army rethren. The contrast between the two services in respect of ank, pay, allowances, and position was very unfair. The Report ives a good summary of those points of difference which were o the disadvantage of the Naval Medical Officer, and the Comnittee have endeavoured to rectify these, with so large a measure f success as to have called forth a strong protest from Sir James ibson, against the peculiar favour shown to the Navy. Unquesionably there are a great many personal and social discomforts ttending a sea-faring life, and the Naval Service is thus placed t a disadvantage in the competition with the Army. It is not very Medical man that loves the sea, and our Army friends must not grudge those who make the sacrifice a few extras by way of a "set off."

Of course it is impossible to please every one, and the recommendations of the Committee for the Naval Medical Service will appear insufficient to some. All the major evils have been removed, and with regard to the rest, "the Committee being divided in opinion, we cannot offer a decided recommendation." The employment of Staff Surgeons instead of Deputy-Inspectors in foreign flag-ships is thought by some a defect; but they admit that there are many reasons to be urged on the other side.

We have gone through the recommendations with some care, and we venture to express the hope and belief that all *reasonable men will be contented.* The pay is liberal for the junior ranks; the prospect of promotion very satisfactory when compared with the Army; and in all other respects the Committee appear to have been guided by an honest determination to put things upon a fair and good footing. The protest to which we have alluded ought at least to prove to our professional brethren afloat that they no longer labour under relative disadvantages.

We were glad to see that Lord C. Paget is evidently disposed to adopt the Report of the Committee; and this reminds us that Sir J. Pakington did not lose the opportunity of saying a good word for that Department whose interests he has never lost one opportunity of protecting.

The New Sydenham Society.

INFORMATION TO NON-MEMBERS.

The Council of the New Sydenham Society begs to ask the attention of those who have not yet joined it, to the special advantages which the current year offers to new members. *With this year it may almost be considered that a new series of works will be commenced.* The "Atlas of Skin Diseases" furnishes the only exception to this statement, and of this the former Fasciculi may be purchased without subscribing for the other works. The "Year-book" has been wholly altered in plan, and will be replaced by a volume of "Biennial Retrospects," the first of which will appear early in 1867. The Council has the pleasure to announce that these "Retrospects," will have the advantage of Editorship as follows:—

MEDICINE	Dr. MURCHISON.
SURGERY (GENERAL)	Mr. T. HOLMES.
OPHTHALMIC MEDICINE AND SURGERY	Mr. T. WINDSOR.
MIDWIFERY	Dr. BARNES.
FORENSIC MEDICINE	Dr. HILTON FAGGE.
TOXICOLOGY AND HYGIENE	
PHYSIOLOGY	Mr. H. POWER.

The following are among the Works which are now in preparation:—

GRIESINGER'S MANUAL OF MENTAL DISEASES, translated by Dr. Lockhart Robertson.

BERNUTZ AND GOUPIL ON SOME OF THE DISEASES OF WOMEN, edited by Dr. Meadows.

HEBRA ON EXANTHEMS AND DISEASES OF THE SKIN, translated by Dr. Hilton Fagge.

VOGEL ON DISEASES OF THE KIDNEY.

A BIENNIAL RETROSPECT OF MEDICINE AND SURGERY, FOR 1866—67.

A SIXTH FASCICULUS OF THE ATLAS OF PORTRAITS OF SKIN DISEASES.

From the prosperous state of the funds of the Society, the Council confidently hopes it will be enabled to issue at least three of the above works and a Fasciculus of Plates for the current year's subscription.

Arrangements have been made to complete the "Atlas of Skin Diseases" as early as possible, and a Fasciculus will be given regularly each year. This Atlas at present comprises the following portraits (life-size):—

Psoriasis diffusa	*From Hebra.*
Psoriasis vulgaris inveterata	*Original.*
Icthyosis Hystrix	*Hebra.*
Herpes frontalis	*Original.*
Molluscum Contagiosum	„
Leucoderma	„
Morbus Addisonii	„
Favus	*From Hebra.*

Favus with Tinea Tonsurans	*From Hebra.*
Alopœcia Areata	——
Pityriasis versicolor	*Original.*
Lupus Serpiginosus	*From Hebra.*
Lupus vulgaris exulcerans	——
Lupus Scrophulosus	——
Pemphigus	*Original.*

New Subscribers will be allowed to obtain complete sets of
hese Portraits (five Fasciculi) for Two Guineas. Those
ho may wish for complete sets of the Society's works, in-
luding the Atlas, can obtain them for seven Guineas. The
ociety has published during seven years twenty-two print-
d volumes and five Fasciculi.; very few complete sets now
emain.

The Council is able to point to the gratifying fact that
umerous subscriptions are still received for back volumes.
s many applications have been made, especially from mem-
ers of the legal profession; for permission to purchase the
olumes of Casper's Work separately, it has been decided to
llow the four volumes to be obtained for two subscriptions
i.e. £2. 2s.)

The Subscription is One Guinea (Rupees ten and a half) annually, payable in advance, in January of each year.

New Members are requested to send their names and
emittances to the Society's Honorary Local Secretary, Mr.
V. N. Chipperfield, 13, Pantheon Road, Madras, from
hom Copies of the last Annual Report, with complete List
f the Society's publications, may be had on application.

James Paget, *President.*
W. Sedgwick Saunders, *Treasurer.*
Jonathan Hutchinson, *Secretary.*

March, 1866.

"They manage these things better in France."

We have very great pleasure in calling attention to the following, which we extract from the "*Gazette des Hopitaux*," 4th January 1866.

"PARIS, 3*rd January* 1866.—We are happy to commence this year with the good news which *The Moniteur* of this day brings us,

"The epidemic of Cholera, first breaking out so virulently in the South of France, and ultimately advancing even to the gates of Paris, has given rise to numerous sacrifices on the part of Physicians. The Students of Medicine have particularly distinguished themselves under these painful circumstances; they deserved unusual rewards. The Order of the *Legion d'honneur*, honorary distinctions in the department of public instruction, freedom from fees connected with their studies; such have been the recognitions (*moyens*) which the Emperor and his Minister have bestowed in their favour.

"This act of justice will be heartily applauded by all.

"At the head of those rewarded, we find a name which enjoys, by just right, the greatest popularity in the school of Montpellier. After having been the first at the outbreak of the epidemic, of which he might have been the victim; after having been the true friend and adviser of the scholars who devoted themselves to the sufferers from Cholera, it was but right that M. Jacquemet should see his name at the top of the list of those rewarded.

"The following is the text of the resolution taken by the Minister of Public Instruction:—

"RESOLUTION.

"The Minister of Public Instruction,

"Considering the Imperial decree, dated 5th December 1865, thus worded;

"'There shall be accorded to those Students of Medicine who shall be brought to the notice of our Minister of Public Instruction, by the *Préfets* of Departments, for their devotion in relieving the sick attacked with Cholera, a total or partial free-gift of the payments which they have still to make for the completion of their Medical Studies, and for obtaining the diploma to which they aspire';

"Considering the reports of the *Senateur Préfet* of the Seine, of the *Senateur* charged with the administration of the department of the Rhone, of the *Préfets* of the departments of Var and of Hérault, of the Vice-rector of the *Académie de Paris*, and of the Rectors of the Academies of Aix and of Montpellier;

"Considering that, during the epidemic of Cholera which has afflicted Marseilles, Toulon, Arles and Paris, a great number of students belonging to the Preparatory School of Medicine and

Pharmacy of Marseilles, to the Faculty of Medicine of Montpellier, and to the Faculty of Medicine and the Upper School of Pharmacy of Paris, have given proof of a devotion worthy of commendation ; it behoves the administration of Public Instruction to honor their conduct by a public acknowledgment ;

“ Considering that, although all have lavished their attentions upon the victims of the plague, the self-denial of the students of the Faculty of Medicine of Montpellier, who, during the holidays, quitted their families and travelled some distance to expose themselves to this danger, merits special mention ;

“ Considering that M. Jacquemet, graduate of the Faculty of Medicine of Montpellier, spontaneously repaired to Toulon in order to direct and partake of the devotedness of the scholars ;

“ *Decree.*

“ Art. I. Named an Officer of Public Instruction. M. Jacquemet, Graduate of the Faculty of Medicine of Montpellier ;

“ Named Officers of the Academy. M. Massol, student of Montpellier ; M. Brière, student of Paris.

“ Art. II. Some scientific works, bearing inscription that they are bestowed in memory of services rendered during the epidemic of 1865, will be awarded in the name of the Minister of Public Instruction :

“ 1st, to M. Jacquemet, graduate of the Faculty of Medicine of Montpellier.

“ 2nd. To the Students whose names follow :—

“ *For services rendered at Toulon. Students of Medicine at Montpellier.*

“ M. M. Gayat, named Chevalier de la Legion d'honneur by the decree of the 5th December 1865 ; Massol ; Hippolyte ; Girard ; Jansion ; Ferran ; Autar ; Azémar ; Miran.

“ *For services rendered at Arles. Students of Medicine at Montpellier.*

“ M.M. Benoit ; Watering ; Fanton.

“ *For services rendered in the Hospitals of Paris. Paris Students.*

“ M.M. Legros and Lelion, named Chevaliers of the Legion of Honour, by the decree of the 5th December 1865 ; M. Brière.

“ Art. III. A free-gift of the duties which have still to be paid to the Treasury account, commencing 1st January 1866, for the completion of their studies (inscriptions, examens, thése, certificat d'aptitude, diplôme), is awarded to the students whose names follow :—

“ *For services rendered ct Marseilles. Students of the Preparatory School of Pharmacy of Marseilles.*

“ M.M. Jullien ; D'Hurlaborde ; Marcorellés ; Coste ; Boutan ; Eyriés ; Nicolas ; Garcin.

For services rendered at Toulon. Scholars of the Faculty of Medicine of Montpellier.

"M.M. Gayat; Massol; Hippolyte; Girard; Jansion; Ferran; Louisel de Saulnays; Autar; Azémar; Miran; Cambon; Falc; Masse.

"*For services rendered at Arles. Students of the Faculty of Medicine of Montpellier.*

"M.M. Benoit; Watering; Fanton; Olier; Dutrénit; Vallat; De la Chataigneraie.

"*For services rendered in the Hospitals of Paris. Students of the Faculty of Medicine of Paris.*

"M.M. Legros, Lelion, Briére, Choyaux, Legroux, Lemaltre, Boussard, Spiess, Lévêgue, Zaepffel, Jaubert, Gorski, Caresine, Hallopeau, Duprat, Carriére, Menriot, Besnier, Rogues, Hayem, Auger, Derlon, Drouin, Paris, Fortin, Jolly, Bergeron, Briancon, Fredet, Michelet, Tardieu.

"*Students of the High School of Pharmacy of Paris.*

"M.M. Byasson, Jungfleisch, Bonnefon, Gérandel, Gindre.

"Executed at Paris, 1st January 1866.

"V. Duruy."

We have translated the whole article, for it would not have been right to have left out a single letter of such a noble decree.

The only comment we have to make is the heading we have put to this item of "Medical Intelligence."

Annual Report of the Madras Medical College.

1864-65.

I.—MEDICAL COLLEGE.

1. The Session.

The Session of nine months' duration, which terminates this day, commenced on the 1st of September last.

2. College Staff.

No changes have taken place among the Professors since last Report (26th May 1864). Dr. Paul acted as Professor of Midwifery from the commencement of the Session until the 27th of October, on which date Dr. Aitken re-joined his Professorship.

* Orders Nos. 2086 and 2596.

Under dates the 18th of June and 29th July 1864,* Government directed that Mr. Harvey, the Assistant to the Professor of Chemistry, should be temporarily relieved from his duties as Teacher of Medicine in the Junior Department, in order to assist the Chemical Examiner in conducting the analysis of the drinking waters of Madras. Assistant Apothecary Hamilton, the Johnstone Medalist of Session 1857-58, was nominated to the temporary vacancy; he joined on the 1st November 1864, relieving Messrs. Wood and Wilkins, who had, in the interim, carried on the duties of the appointment.

3. Constitution of the Departments and Classes at the commencement and close of the Session.

At the commencement of the Session, the *Senior Department* consisted of:—

1	Lane Scholar in his.....................5th	year of study.
2	Government Students in their... .....4th	do.
2	do. do. 3rd	do.
1	do. do. and 1 Lane Scholar in their............2nd	do.

—making a total of 7 Students.

Lane Scholar Evers, having passed his final examination successfully, will receive this day the Diploma of Graduate in Medicine and Surgery of the College. Six Students remain upon the Roll. There were no admissions to the Senior Department during last Session.

The *Second Department*, at the opening of the Session, consisted of:—

1st Class Students	....	11
2nd do.	....	10
3rd do.	....	20
	Total...	41

of whom eleven "1st Class" Students having passed the Final Examination Committee, will receive, on the present occasion, their Certificates of Qualification for the grade of Assistant Apothecary. One lad, a remanded Student of the 3rd Class, named D. Solomon, was permitted to resign the service from the 1st October 1864.

The present roll of the Second Department, stands as follows:—

1st Class Students	....	11
2nd do.	....	10
3rd do.	....	19
	Total...	40

The numbers of the *Junior Department*, at the beginning of the Session, were as follows:—

1st Class Students	....	32
2nd do.	....	29
3rd do.	....	40
	Total...	101

Majeed Khan, who resigned the service in order that he might appear as a Candidate for admission to the Second Department, having failed to gain admission to the same, was permitted by Government (under Order No. 2791*) to re-join his batch in the Junior Department. Doorgiah, a native Student of the 1st Class, died on the 2nd September 1864, and 2nd Class Student Coomarasawmy on the 17th February 1865. 2nd Class Student D. Bastian has been dismissed the service from the 1st of May for a serious offence. (G. O. C. C. dated 10th May 1865).

Four Pupils of the 3rd or English Class, failed to join College.

At present the Department stands thus :—

1st Class Students	....	31
2nd do.	....	27
3rd do.	....	36
	Total...	94

Of this aggregate, thirty-one lads, constituting the 1st Class of the Junior Department, having passed the examination as qualified for the grade of 3rd Class Hospital Assistants, will receive their Certificates of Qualification on the present occasion.

4. Lectures, Examinations, &c,

The subjoined extracts from the Annual Reports of the Professors shew the number of lectures delivered to, and examinations held in, each Class during the past Session.

The Professor of Medicine, &c., reports as follows :—

"One hundred and thirty-three lectures were delivered during the Session. Twenty three examinations were recorded."

The Professor of Ophthalmology observes :—

"The Course of Ophthalmology this Session consisted of sixty-two lectures, including ten written and eight oral examinations."

The Professor of Midwifery remarks :—

"During the Session, one hundred and nineteen lectures have been delivered, of which thirty-seven were given by Dr. Paul, the rest by me. The number of examinations has been thirty-three, of which five were written and twenty-eight oral."

The Professor of Surgery, &c., states that "the number of lectures given was one hundred and twenty. The number of examinations held was thirty-six."

The Professor of Materia Medica reports, "Lectures, one hundred and ten. Recorded examinations forty."

The Professor of Chemistry reports as follows :—

"The Chemistry Class met one hundred and fifty-six times during the past Session ; eighty-four of these meetings were occupied with the usual course of lectures, the remaining seventy-two being Class examinations ; of these, five were written ;—all were registered."

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* Dated 26th October 1864.

The Professor of Anatomy, &c., observes :—

Anatomical Course,—During the Session I have delivered one hundred and four lectures on Anatomy.

" I have held sixty examinations; the results of fifty-three of which have been recorded, viz., twenty-four of the Second Class, and twenty-nine of the Third Class."

Physiological Course.—I have delivered fifty-eight lectures on Physiology.

" I have held thirty examinations in Physiology; the results of twenty-three of which have been recorded, viz., fourteen of the Senior, and nine of the Junior Class."

The Professor of Medical Jurisprudence states that " the course has consisted of seventy-five lectures and fourteen examinations."

Remarks.—The recorded examinations of the several classes stand in the following numerical proportion to the lectures :—

In the Class of	Medicine.................... as	1 to 6.
Do.	Ophthalmology..............	1 to 2½.
Do.	Midwifery.....................	1 to 3⅔.
Do.	Surgery.........................	1 to 3⅓.
Do.	Materia Medica..............	1 to 2¾.
Do.	Chemistry......................	1 to 1⅙.
Do.	Anatomy........................	1 to 1⅔.
Do.	Physiology.....................	1 to 2.
Do.	Medical Jurisprudence.....	1 to 5⅓.

It was found necessary this Session to adopt some better arrangements than existing ones as regards the study of Practical Anatomy. With the concurrence of the Professor of Anatomy, four hours daily, namely, from 6 to 10 A.M. were set apart for this purpose. The alteration has worked well, and has remedied a long-existing defect in the College arrangements.

A stop was put this Session to a custom, which had crept in, of allowing lads to attend, as voluntary Students, other classes than those indicated in their curricula.

It was deemed expedient also to discourage the practice of extra hours' study, and to arrange that, as far as practicable, the lads should have a whole holiday on Saturdays. These changes have acted well; Students are no longer permitted to attend classes not included in their curricula, their energy and strength are no longer exacted to attain proficiency in one branch, at the cost of failure in another, and every lad can now look forward to his Saturday holiday from College, as his ungrudged and fairly earned day of rest and recreation.

Six weeks before the close of the Session, students of the 2nd and 3rd years, who were reported by the Professors as " deficient" or " inattentive," were directed to attend College a certain number of hours on Saturdays, to enable them to overtake their several subjects, before the returns of the classes should be made out. This final chance of making up for lost time is regarded by the students as a valuable privilege, rather than as a punishment.

I have devoted Fridays to personal examinations of the classes in College, and have satisfied myself, as far as practicable, of the capacity, industry, and acquirements of every student of the Institution.

5. Senior Department.

Speaking of the Senior Department, the following is a correct summary of the opinions of the Professors on the conduct and capabilities of the several Students.

Lane Scholar Evers.

Of Lane scholar Evers, Mr. Blacklock reports, "He has had better health this year, and has been most industrious, and made much progress. He knows his profession well."

Dr. Smith observes, "The senior student is Lane scholar Evers, of whose conduct, regularity of attendance, attention to the lectures and industry, I have to speak in warm terms of approbation. His progress in his studies has been steady."

Dr. Aitken alludes to the same student's conduct as "very commendable," and to his attainments as "highly creditable." Dr. Urquhart alludes to "his intelligence, industry, ability, progress, and conduct" as "most satisfactory."

Dr. Paul remarks, "Lane scholar B. Evers has made fair progress during the Session, but he has not attained the high standard former years gave promise of, and during the last two months of the Session especially, others have gained on him considerably."

S. W. Seethumbarum Pillay and C. Chinnapoo.

Of fourth year Government students C. Chinnapoo and S. W. Seethumbarum Pillay, the following testimonies are borne by their teachers. Mr. Blacklock observes—"C. Chinnapoo, Government scholar, in his 4th year in College, and second in Medicine. He has been most persevering, and has improved very much. S. W. Seethumbarum Pillay has had better health than during last Session, and has been very industrious." Dr. Aitken uses the same terms with reference to these students he had employed, when speaking of Evers, and adds, "Chinnapoo is a most intelligent student, and although this is his first course of Midwifery, he has made very great progress. The attainments of S. W. Seethumbarum Pillay are fair, and although slow of apprehension,—which has appeared to me to be partly owing to his insufficient acquaintance with English —I think he is deserving of high approval." Dr. Paul reports— "Of the two Senior Government students Chinnapoo and Seethumbarum Pillay, I am glad to report very satisfactorily. They are intelligent, industrious, possessed of considerable ability, and very well-conducted."

P. S. Gnanamoottoo Pillay & Pursooramen Naick.

Of the 3rd year Government students P. S. Gnanamoottoo Pillay and Pursooramen Naick, Mr. Blacklock reports—"He (*i. e.*, P. S. Gnanamoottoo Pillay) has lost forty-two days by sickness. He is very intelligent, and has made fair progress." "P Pursooramen Naick is dull and slow, but promises to do better. The conduct of these young men has been excellent." Dr. Paul observes—"Of the 3rd year Government students Gnanamoottoo Pillay and Pursooramen Naick, I am unable to speak so highly. They have neither the intelligence nor the industry of the two senior. Gnanamoottoo has been no fewer than forty-two days absent during the Session, and he is rather inattentive to his studies. Pursooramen is less so, but there is room for improvement in both, in this respect." Alluding to the same lads, Dr. Montgomery reports that "they have improved satisfactorily, but Gnanamoottoo was long in hospital, and thus made less complete progress than I could have wished." "Having," he adds, "on two previous occasions reported unfavourably on these young men, I have much pleasure in according a more favorable opinion of their industry and intelligence during the past Session."

Mr. Chipperfield's testimony is decidedly unfavorable as regards both students, though he speaks highly of Gnanamoottoo Pillay's written replies to certain questions in Physiology, set by the Annual Class Committee. Mr. Chipperfield closes his notice of these lads with the following words:—"I cannot speak positively as to their industry, but I should say it is defective. Their intelligence is fair, abilities of a moderate order, and *progress decidedly unsatisfactory*. Their conduct in class has been unexceptionable."

2nd year Government student W. Gregory, and Lane scholar Danacottee Rajoo.

The testimony borne to the character, abilities, industry, and conduct of these students by the Professors under whom they have studied, is very high. I select Dr. Montgomery's remarks upon them as a fair specimen of the opinion entertained of them. "Gregory and Danacotee Rajoo are both highly intelligent hard-working students: I can speak in the highest terms of their abilities and industry."

In reporting the result of Evers' final examination for the Diploma of the College, the Committee observe—"Lane student B. Evers was the only elève in this Department who came up for examination, and he has acquitted himself in a highly creditable manner. In almost every subject he attained the highest mark, while his written papers discover a facility of expressing himself correctly and well, not often met with among the alumni of this College. At the instance of the Committee he dissected the neck remarkably neatly and carefully, and the operations he performed in presence of the Members of the Committee, though wanting that dexterity which practice only can secure, tested his acquaintance with practical surgery, and proved it to be very fair." To this I have only to add that Mr. Evers leaves College the first in all his classes, and with the best wishes of his teachers for his future success. If good character, fair abilities, untiring industry in the attainment of professional knowledge, can avail to secure him success in life, then that success may be regarded as certain.

The Committee of the Lane Scholarships are to be congratulated upon the selection they have made of young men to hold these useful scholarships—would there were more of such scholarships in Madras to perpetuate the memory of distinguished men, and fewer cenotaphs, statues, and portraits !

The following is a summary of the results of the annual examinations held at the close of the Session :—

Seethumbarum Pillay has been pronounced "good" in his written examinations in Midwifery, Surgery, and Medicine ; his oral examination on the same subjects being respectively "indifferent," "fair," and "indifferent." In the written examination on Therapeutics he is rated as "fair." Chinnapoo has had the good fortune to obtain "very good" marks in the oral examination in Therapeutics, Midwifery, Surgery, and Medicine, and in the written examinations in Midwifery, Surgery, and Therapeutics ; in the written examination in Medicine he is rated as "good."

These two young men deserve great credit, alike for their industry and their intelligence. Chinnapoo promises to be the abler man of the two ; he is prosecuting his studies with much zeal and success.

Pursooramen Naick has obtained "very good" marks in the oral examination in Materia Medica alone ; in the written examination on the subject his mark is "good." His oral examination in Physiology ranks "fair," his written on the same subject "*very bad.*" In Surgery, both oral and written, he ranks "indifferent," and in Medicine "indifferent" in the oral, and fair in the written examination. He is decidedly deficient in Physiology, and made but a poor appearance in Surgery and Medicine.

Gnanamoottoo Pillay is not more fortunate. In Materia Medica (oral), and in Physiology (written), he has secured "very good" marks, whilst in the oral examination in Physiology he is ranked as "good." In Surgery (oral) he is entered as "very bad," and in the written examination on the same subject as "indifferent." In Medicine, both oral and written, he is rated as "bad." Taking into consideration the indifferent character of the examinations passed for two successive Sessions, by Gnanamoottoo Pillay and Pursooramen Naick, as well as the repeated and partly unexplained absences from College of the former of these young men, I recommend that the Government scholarships be withdrawn from them for one year. Another unfavorable report next Session must elicit from me a more serious recommendation.

In the oral and written examinations on the subjects of Anatomy, Chemistry, and Materia Medica, Gregory has received "very good" marks in all. In the same subjects, Danacotee has received "very good" marks in the oral examinations in Anatomy and Materia Medica, "good" marks in Chemistry both oral and written, "good" in the written examination on Anatomy, and "fair" in the written, examination in Materia Medica. These young men deserve hearty commendation.

6. Second Department.

In referring to the 1st Class of the Second Department, Mr. Blacklock observes :—

1st Class, 2nd Department.

"Tyrrell, Doyle, Hesterlow, Dodd, and Eate have made excellent progress, and will turn out to be good Assistant Apothecaries. Gibson, Jones, Hellein, Goggan, and Francis, have been dull and slow; though, excepting *Jones* and *Francis*, doing their best to study diligently."

Dr. Smith remarks, "Eleven young men of the Second Department attended the Course; with all of these I am well pleased. Their conduct has been unexceptionable, their attendance regular, and their attention praiseworthy. All have been very industrious."

Dr. Paul reports, "The youths in this Department are very unequal in intelligence, industry, and ability; consequently some have made very satisfactory progress and some have not."

The lads of this batch have passed the final examination successfully, none having failed. The Committee make the following remarks :—

"The eleven students of the Second Department have all passed, but with very different degrees of merit. Tyrrell and Doyle are at the head of the list, while *Francis* has narrowly escaped rejection. Before concluding, the Committee beg to express their thanks to the Principal of the College and the Professor of Anatomy for an opportunity of testing the anatomical attainments of this class by actual dissection.

With the exception of Cajah Furreed Oodeen,* the youths dissected well the parts set them, and those who were called upon to demonstrate on the dead body performed the task most creditably."

2nd Class, 2nd Department.

With reference to the 2nd Class of the Second Department, Mr. Blacklock observes :—

"Ellis, Watts, Rath, and Downing, were remanded last year, so that this has been their second year in Medicine. Ellis has improved very much this year, and is at the head of his class. The other remanded students have been extremely dull and stupid, and have retarded the progress of all the other students very much, by requiring a large amount of repetition, which has had, I regret to say, scarcely any effect."

Dr. Paul remarks, "The youths in the 2nd Class are, generally speaking, very young and thoughtless. None are hard students, and

* This candidate is a 2nd Dresser, and does not belong to the classes under remark.

several are very deficient in English and the more elementary branches of study. I cannot help repeating, what I have often before expressed, that a very imperfect acquaintance with their own language is the great defect in the youths of this College. They come to College so little acquainted with it, that they are scarcely capable of pursuing, with effect, any study. A great part of their intellectual energy is expended in mastering the language in which their studies are presented to them, and they leave College in regard to it in the condition they ought to have entered College."

Dr. Montgomery reports, "Of the remanded students Rath, Watts, and Ellis, I can scarcely speak too highly. Rath has, through the whole Session, maintained the first place in the class, being decidedly superior to Gnanamoothoo and Pursooramen.

"Watts and Ellis, especially the latter, have done very satisfactorily, and are admirable examples of the good effect of the plan of occasionally remanding students who are deficient only in application during the earlier years of their study. *Downing* has not made satisfactory progress, and does not seem anxious to improve. Of the six students who joined the class for the first time, I cannot speak very favourably as a class."

Mr. Chipperfield gives a careful analysis of the industry and attainments of the lads of the Second Class both in Anatomy and Physiology, which, as it appears in his report in the Appendix, I need not repeat here. Of the four remanded students* he speaks of Rath as industrious but slow, of Watts as having last position in his class, of Ellis as having made decided progress, and of Downing as unable to master and retain the details of Anatomy. Adverting to the remaining six students of this class, Mr. Chipperfield reports favourably of Douglas, McFarland, and Webber, and unfavourably of Currie, Marrow, and Barker. In the Physiological Class, Ellis, Rath and Downing, among the remanded students, have merited commendation; Watts is alluded to unfavourably. Of the remaining students, Douglas is alluded to in high terms of commendation; McFarland and Currie have disappointed their teacher; Webber has done fairly; Marrow and Barker have failed.

At the close of last Session twelve lads of the 2nd Department were remanded; of these, Rath has obtained "approval" in Anatomy, "high approval" in Physiology, and has been named for a prize in Materia Medica, though, being a remanded student, it is against the rules of the College that he should get a prize in any class to which he has been remanded. In Medicine and Surgery he has not held his ground, but, upon the whole, the remand has done him good, and he is likely to turn out an industrious lad of fair capacity. Downing has worked fairly last Session, but he is very deficient in intelligence. In Anatomy, Medicine, and Surgery, he has been reported as "specially deficient," in Materia Medica as "deficient," whilst he has gained "approval" in Physiology, though this is coupled with the recognition of his "defective intelligence." Watts is holding his ground, and Ellis has acquitted himself creditably.

---

*Rath, Watts, Ellis, Downing.

3rd Class, 2nd Department.

In reporting upon the 3rd Class of the Second Department, Dr. Wyndowe remarks :—

"Second Department, in all nineteen students. Seven were lads remanded from last Session—of these, Garraty and Gooroosawmy have done well, Miles fairly, O'Brien and Lacey have failed completely, and the others have proved but indifferent students.

"Twelve were new students. Baker and Sunjeevee merit approval, and had Dale shown from the commencement of the Session the industry and intelligence he has displayed during the latter part of it, I would have willingly awarded him high approval ; the position he has attained in the class entitles him to the prize :—

"Jones and C. G. Roberts have done tolerably well, the remainder but indifferently.

"The conduct and behaviour of the Class throughout the Session has been generally good, the exceptions are James and Gormanly. Carew has been idle and inattentive."

Mr. Chipperfield observes of the 3rd Class lads that Gooroosawmy had maintained his place at the head of the class, that Garraty had progressed satisfactorily, that Miles, Frederick, and D'Santos had acquitted themselves but indifferently, and that O'Brien and Lacey had totally failed ; these seven lads being remanded students. Of the remaining young men constituting the class, Mr. Chipperfield speaks highly of Sunjeevee, Dale, and Baker : approvingly of C. G. Roberts and Jones ; doubtfully of Ramachundra Numby, and with disappointment of Carew, James, Thompson, S. Roberts, and Gormanly. The remarks made upon the same lads in his Physiological report by Mr. Chipperfield correspond very closely with the above, which have been recorded of the Anatomical Class.

The annual class examinations give the following results affecting the 2nd and 3rd Classes of the 2nd Department :—

Second year Military Students.—Of the four remanded lads, all have done well in the oral examinations in Materia Medica, fairly in Physiology, indifferently in Anatomy, and well in Medicine and Surgery. In the written examinations they have done well in Materia Medica, fairly in Surgery, indifferently in Physiology and Medicine, and badly in Anatomy.

"Downing is the least promising of this batch.

"Of the remaining six lads in this class, Douglas has acquitted himself most creditably in his several subjects, McFarland and

Currie have done well, Marrow and Webber fairly, and Barker has failed in every subject except Materia Medica. Upon the whole, and, excepting *Downing* and *Barker*, this class has done fairly.

"*First year Military Students.*—In this class are seven remanded students. All have done well except O'Brien and Lacey, regarding whom there now appears to be no reasonable expectation that they will ever make useful public servants in the Subordinate Medical Department. Of the remaining twelve lads which compose this class, Sunjeevee, Dale, C. G. Roberts, and Baker have acquitted themselves with credit; Jones, White, and Thompson fairly, whilst S. T. Roberts, Ramachundra Numby, Carew, and James, have failed, and Gormanly has been rated as "very bad" alike in his oral and written examinations.

The conduct of the Second Department students has been unexceptionable. There are, it is true, eight entries in the Black Book against them, but these represent only four offenders, all of whom have, on other grounds, been recommended for discharge.

It is proposed that the following lads of the Second Department be remanded :—

J. Barker and S. White ; and that the following students be removed from the service, as never likely to prove efficient public servants :—

M. Downing, D. O'Brien, W. E. Lacey, A. Carew, H. A. James, W. Thompson, S. T. Roberts, P. Gormanly.

7. Junior Department.

The 1st Class of the Junior Department, consisting of thirty-one lads, has been passed by the Final Examination Committee with the following remarks :—" In their examination of this Department, the Committee bore in mind that 'these men are not employed or paid as Doctors competent to treat serious diseases,' and their 'duties are or ought to be of a very mechanical nature.'* The standard of examination was consequently fixed very low, but even that low standard, though reached by some of the pupils, was barely reached by most, and not approached by others. In passing the whole class of thirty-one members out of the College, it therefore behoves the Committee to state that, though able to perform the minor and mechanical duties of a hospital under the directions of a Medical Officer, these young men are quite unfit to be trusted with the Medical charge of even a Naigue's guard. Their knowledge of the theory and practice of Surgery and Medicine is exceedingly scanty, and many years of accurate observation and diligent study in a hospital will be necessary to qualify them for such responsible duties as are, at present, performed by many First and Second Dressers in the service."

I am of opinion that this observation of the Final Examination Committee, though accurate in the main, is perhaps rather strongly

* Vide Order of Government, No. 84, dated 29th March 1865, para. 7.

expressed. From repeated personal examination, under circumstances which gave the pupils more confidence, for, before the Final Examination Committee, they appeared to be panic struck, I am satisfied that the lads constituting the upper third of the class are decidedly intelligent, and have acquired a fair rudimentary knowledge of their profession. At the same time I admit that the course of education now meted out to these lads, and to be meted out under recent orders to their successors, can never, in the words of the Committee, "qualify them for such responsible duties as are at present performed by many First and Second Dressers in the service."

With reference to the 2nd Class of the Junior Department, Dr. Montgomery observes:—"Mr. Ailsworth, the Native Assistant, under whom this class was conducted, has reported as to the individual merits of the twenty-eight boys constituting this class.

"They were examined at least once a week, and I found that they were carefully and judiciously taught. The upper portion of the class was remarkably good, but four of them were found deficient, and two specially deficient.

"Of this class at least five were fully equal to the standard of acquirement of the better boys in an average class in the Second Department."

Mr. Chipperfield remarks:—"The number of students in the Anatomical Class of this Department is twenty-eight. My Assistant, Mr. Wilkins, is their instructor, and he has held thirty-two examinations in addition to his daily course of instruction. I have examined the class seven times, and the results of these examinations have shown me, 1st, that these lads have a pains-taking tutor; and, 2nd, that many of them are lads of tolerably fair intelligence, and that they are industrious."

The results of the Annual Class Examinations of the 2nd and 3rd, or English Class of the Junior Department, may be summarized as follows:—

Second Class.—Of the seven remanded students, all have done fairly, except Murriadoss; the remaining lads have acquitted themselves, upon the whole, creditably, except Moothookisten, Sabapathy, Majeed Khan, Swaminaden, and Appavoo.

Third Class—(English.)—This class, upon the whole, has acquitted itself indifferently. Generally speaking, they read well, spell fairly, give the meaning of terms, both ordinary and medical, with tolerable readiness, but in writing to Dictation and in Arithmetic they have proved themselves to be somewhat deficient. The greatest number of "very bad" marks occurred in "Arithmetic," and, after that, in "writing to Dictation;" in "Geography," and in the "meaning of medical terms;" out of thirty-six lads examined there were but three "very bad" marks, in "reading" only one, and none at all in the "meaning of words" and "spelling."

The lads of the Junior Department are quiet, orderly, and well conducted ; no charge of any consequence appears in the Black Book against any of their names ; their chief offence consists in absenting themselves without leave from their hospital duties, and from their College classes. Loss of place in their classes, extra duty at hospital, loss of holidays during the recess, and, in more serious cases, one or two days in the Conjee house, are sufficient punishments for such trespasses. Punishment is rarely required to be inflicted a second time.

The following lads of the second and third classes are recommended to be discharged from the service, on the ground of incompetency :—

Moothookistnen..........No.	791	Syed Furreed...........No.	731
A. Appavoo............ „	776	Subdur Hussain........ „	822
C. Sabapathy............ „	795	Mootealoo............... „	825
Syed Ally................ „	831	V. R. Narrainsawmy... „	833

II.—GENERAL.

8. Prizes and Medals. The Johnstone Medal has not been awarded this Session, nor has the Government Gold Medal.

It is a matter of regret that the boxes containing the consignments of Library and Prize-books have not come to hand ; the vessel by which they are expected left England in October last, and ought to have reached Madras about February, but stress of weather and repeated disasters have caused this unexpected and disappointing delay.

The list of prizemen will be read to-day, the prizes themselves will be forwarded to the successful candidates on arrival.

9. The Library. Two hundred and forty-seven volumes have been added to the Library during last year, and a considerable consignment of books is now on its way from England. A list of additions and donations to the Library is given in the Appendix.

Within the last few days Dr. Montgomery has presented no fewer than a hundred and eighty-seven volumes to the College Library. "These volumes," Dr. Montgomery observes, "comprise the works on Materia Medica and Botany which I have collected for reference, and to assist in the preparation and illustration of my lectures during the present and past Sessions. I venture to solicit that these works may be considered specially intended for the use of my successor and his pupils."

The thanks of the College have been conveyed officially to the Donor for his handsome gift, which forms but a small portion of the valuable presentation Dr. Montgomery has made to this College during the time of his connection with it. In wishing him God-speed in his new and interesting field of labor, we, as Professors, cannot forget his ability as a fellow-worker, his success as a teacher, or the deep interest he has ever shown in the welfare of this Institution. His return among us, I am sure, will be hailed with pleasure, should the chair of Hygiene ever be erected into a separate Professorship.

Dr. Montgomery suggests that a portion of his donation of books should be added to the Students' Library. "It has long appeared to me," he remarks, "that this portion of the Library is very incomplete, and with a view to improving its condition, and in order to render it more thoroughly useful to the students, I bring to your notice the desirability of transferring to it as many works as can be spared from the General Library." What Dr. Montgomery suggests had already been done; the nucleus of a Student's Library has been formed; his donation will be added to it, and every means will be taken to make this portion of the Library of practical utility to the students. Medical officers might bear in mind the Students' Library, when, on leaving India, they find it a matter of difficulty to determine how best to dispose of their Medical works, and friends of Education generally, whether European or Native, might, by suitable additions to this branch of the General Library, confer a great benefit, at little cost, upon the students of the Institution.

10. The Museum.

A list of Pathological and other specimens added to the Museum during last year is given in the Appendix. Amongst these will be observed some valuable models of Anatomical studies, prepared by Mr. Towne of Guy's Hospital, and forwarded to the Museum by the Right Honorable the Secretary of State for India.

A large consignment of midwifery instruments and apparatus, valued at £150, has just been received. The circumstances under which this grant was given by the Madras Government are stated in last year's report. The instruments, &c., have been carefully selected by the Professor of Midwifery, and have reached Madras in a state of good preservation.

Dr Shortt has kindly presented to the College a small mineralogical cabinet, and a herbarium of cryptogamic plants from the Shevaroys.

Mr. Chipperfield has done good service to the Museum by taking upon himself the labor of arranging the collection of microscopic objects in the College cabinet. He has added to the obligations I am under to him, by preparing also, at the sacrifice of time and labor, a complete catalogue of the collection.

11. The Text Books.

Order dated 29th March 1865, No. 84, para. 14.

Assistants.—Messrs. Wood, Wilkins, Harvey, Hamilton, Ailsworth, and Watkins.

No satisfactory arrangements are at present in force as regards the supply of text books for the students. This question, however, has been referred by Government for the consideration and report of the Director of Public Instruction.

A list of Assistants and Prosectors is entered in the margin.

Prosectors.—Gregory, Tyrrell, Douglas, McFarland, Currie, and Ramanjooloo.

12 Assistants, &c.

The duties of the several Assistants were fully detailed last year.

Mr. Wood, the Assistant to the Professor of Botany and Materia Medica, conducted Dr. Montgomery's class (for broken periods of the Session, amounting, in the aggregate, to three months) during the Professor's absence from Madras on duty. Alluding to this, Dr. Montgomery observes,—"During my temporary absence from Madras on public duty, my Assistant, Mr. Wood, took charge of the pupils of the Senior and Second Department. On my return I found that the classes had, under his instruction, made exceedingly good progress. I have to record my sense of Mr. Wood's good service in this matter;" and with reference to Mr. Wood's general services, Dr. Montgomery concludes his report by remarking,—"My Assistant, Mr. Wood, has, during the last six years, been my chief support in conducting the minor details of teaching, and his natural abilities, diligence, and experience have made him a most valuable public servant. I desire to record in the strongest manner my own gratitude for his attention to the classes under me, and my sense of his good service in this College. I may add that, during his employment in it, I had not once to blame him for any single act of neglect or error of judgment."

During the past Session, Mr. Wood has delivered one hundred and thirty lectures on Surgery to the 1st Class Junior Department, and held twenty-five examinations. He has also lectured to the same class, in conjunction with Mr. Wilkins, thirty-six times on the Practice of Medicine, and has held seven examinations.

As senior Assistant, his services have been most valuable to me in conducting the various details of the College.

Mr. Wilkins, as teacher of Anatomy and Physiology, has delivered to the 2nd Class of the Junior Department one hundred and twenty-four lectures, and has held twenty-two examinations. Mr. Chipperfield, in his report, alludes to this Assistant in the following terms:—

"Mr. Wilkins, the Demonstrator of Anatomy and Curator of the Museum, has a prospect of speedy promotion to Second Apothecary. I trust that this step of rank will not necessitate his removal from his present post. His admirable knowledge of Anatomy, and his capabilities as a tutor, render it highly desirable that I should not be deprived of his services just as a change is about to be made in the College curriculum."

Mr. Chipperfield's recommendation has received my cordial support.

Mr. Harvey, who is Assistant to the Professor of Chemistry and in charge of the Laboratory, is spoken of by Dr. Wyndowe, as *follows*:—

"My Assistant, Mr. Robert Harvey, has, throughout the Session, rendered me most efficient aid."

Mr. Hamilton, the Acting Assistant in the Junior Department, has held fifteen examinations and has deliverd ninety-two lectures on Medicine during last Session. He has done justice to his subject. Mr. Blacklock refers to him in the following terms:—

"Assistant Apothecary Hamilton, the teacher of the Theory and Practice of Physic to the Junior Department, has done much good to all the classes in Medicine by his unwearied diligence in subjecting them to examinations."

Mr. Ailsworth, the Native Assistant, has directed the instruction of the Junior Department in Materia Medica and Therapeutics during the past year. In Materia Medica he gave one hundred and twenty lectures, and held thirty-seven examinations. In Therapeutics he delivered thirty-nine lectures, and held thirty-two examinations. He promises to be a laborious and pains-taking teacher.

Mr. Watkins, the English teacher in the Junior Department, has given every satisfation during the past year. His services, extending over six years in connection with this Institution, have now come to an end, for, by a recent decision of Government, the teaching of English in the Primary School is directed to be discontinued.* He has performed his difficult, and often unsatisfactory duties as English teacher in the 3rd Class of the Junior Department with patience, zeal, industry, and reasonable success. I have to express a hope that this notice of his services in connection with this Institution may attract the attention of the Director of Public Instruction.

*Order of Government, dated 29th March 1865, No. 84, para. 6.

The Prosectors have performed their duties, with one exception satisfactorily, as have also the Clerk N. Ramanatha Pillay, the Librarian P. R. Narrainsawmy Moodeliar, the Draughtsman Mooroogasan Moodeliar, and the general servants of the College.

13. Sickness.

The amount of sickness, principally of an asthenic character, among the students, having been considerable during the past Session, I requested Mr. Blacklock to furnish me with a memorandum containing an abstract of the facts, with any comments he might see fit to pass upon them. He has obligingly done so, and from his communication I gather that out of 143 students of all classes there were 105 admissions to hospital, or 73·5 per cent. There were 45 admissions or 109·5 per cent. out of 41 European and East Indian students, and 60 admissions or 67·5 per cent. out of 89 native students—56 per cent. of the cases which occurred among the European and East Indian students depended wholly or in part on Asthenia, and among the native students 38 per cent. arose from the same cause. Mr. Blacklock's letter will be found in the Appendix. It is a suggestive one.

14. Cricket Club.

The Cricket Club, established some two years ago by Mr. Blacklock, and supported by Professors and students, furnished much manly recreation of a healthy kind to the students during the first half of the Course; the natural anxiety, however, arising from approaching examinations, diminished the eagerness for the game somewhat during the last few months of the Session. Every encouragement is given to the Club, which is at present in a flourishing condition. The 1st Class lads of the 2nd Department, for obvious reasons, seemed most inclined to prosecute with spirit this manly exercise.

Assistant Apothecary W. D. Stewart, and 2nd Dresser Cajah Furreed Oodeen.

In the last report of the College the following remark appears with reference to Assistant Apothecary Stewart :—"Before concluding this part of the report, the Principal has great pleasure in alluding to the zeal and regularity with which Assistant Apothecary Stewart, of the Civil Dispensary attached to the General Hospital, attended the College classes during the Session. He also joined the examinations and acquitted himself very creditably." Since then, Mr. Stewart has prosecuted his studies with earnestness and ability, and having appeared before the Final Examination Committee he has passed a most successful examination. The subjoined remarks of that Committee on Mr. Stewart's qualifications require no comment :—

"Eleven pupils in this department of the College subjected themselves to examination, and with them 2nd Dresser Cajah Furreed Oodeen who aspired to the grade of Assistant Apothecary, and Assistant Apothecary W. D. Stewart, who, having left the Medical College after a very short curriculum of study, and found that fact adverse to his advancement, determined to place himself as soon as possible on a level with the best educated men in the service to which he belongs. He has accordingly, for the last two years, taken advantage of his appointment to the General Hospital to prosecute his studies at the College, with the view of submitting to the full and final ordeal that candidates for his grade have generally to pass. In this examination he has been pre-eminently successful. He has obtained the highest mark in every subject but one, and in that one his attainments were noted as good. His papers were exceedingly well written, and do him the greatest credit; and the Committee feel certain that few have left this College so thoroughly well prepared for practice and with such high promise of success as Assistant Apothecary Stewart. To Cajah Furreed Oodeen the same favorable testimony cannot be borne. While giving him every credit for laudable aspirations, the Committee regret that he has shewn himself so much below the standard of qualifications necessary for the position he desires to occupy."

It would be well, if those who passed out of College prematurely as Mr. Stewart did in 1857, were afforded the opportunity of completing their proper curriculum at College as the convenience of the public service permitted. Government and its Medical subordinates would alike gain by the arrangement.

16. Historical Notice.

A short historical notice of the principal events which have occurred since the date of last report may conclude this report.

Inspector-General of Hospitals.
Deputy Inspectors General MacKenzie and Inglis, the Director of Public Instruction, the Principal Medical College.

(*a*.) Under Order No. 353, dated 18th November 1864, a Committee (composed as per margin) was nominated for the purpose of considering and reporting upon points connected with the general operations and efficiency of the Medical College. On considering the report submitted by this Committee, Government, under Order No. 84, dated 29th March 1865, announced their decision. The principal points of that decision may be noted.

1. That for the 2nd* and Junior Departments, a preliminary hospital attendance of two years shall hereafter be required.

2. That a three years' Collegiate course shall be sufficient for lads of the 2nd Department, and a two years' professional course in the Primary School for students of the Junior Department.

3. That instruction in English, now given to the Junior Department, shall in future be given up.

4. That certain specified curricula laid down for the 2nd and Junior Departments shall be adopted.

5. That the subject of Hygiéne shall be entrusted to the Professor of Medical Jurisprudence.

6. That a Professor of Materia Medica shall be appointed in the place of Dr. Montgomery, whose duties as Secretary to the Sanitary Commission leave him no time for his Professorial labours.

7. That the Session shall commence, in future, on the 1st October, and terminate on the 30th of June.

(*b*). Under an Order, dated 11th April 1865, No. 92, Government appointed Assistant Surgeon George Bidie to the chair of Botany and Materia Medica, on the retirement of Dr. Montgomery.

The Governor in Council further directed* that Dr. Montgomery be informed that Government have noticed with much satisfaction the very favorable testimony which is borne to his efficiency as a Professor in the Medical College; and that he is permitted to retain his Professorship until the arrival of Dr. Bidie.

* Vide Notification issued by the Principal Inspector General, dated 22nd April 1865.

* Order No. 102, dated 26th April 1865.

(*c*). Under the authority* of the Director of Public Instruction, it has been publicly notified that candidates for admission to the Senior Department of the College shall, in future, be required to pass the General Education Test laid down for candidates for Medical degrees in the University of Madras.

* Dated 26th April 1865, No. 943.

(*d*). Mr. Boalth, who obtained his Diploma as Graduate in Medicine and Surgery last year, was appointed, on the 2nd March 1865, Sub-Assistant Surgeon and Superintendent of Vaccination. I could have wished that this young Graduate's sphere of labor had been one more purely professional, for much of a Medical man's interest in his profession depends upon the earliest impressions of his professional career.

On Mr. Evers' quitting College, one of the Lane Scholarships will become vacant. The Committee have recently raised the monthly allowance of the scholarships from Rupees 20 to Rupees 30, chiefly in consequence of the present state of the Madras market.

In concluding this report, I take the opportunity of rendering my cordial thanks to my brother-Professors for the support I have received from them during the past year. May the mutual confidence and uninterrupted harmony which have marked our intercourse as fellow-laborers long continue.

GEORGE SMITH, M. D.,
Principal.

MEDICAL COLLEGE,
31*st May* 1865.

Proceedings of a Committee of Examination of the Students of the Madras Medical College, assembled in accordance with G. O. G. No. dated 8th April 1865.

PRESIDENT.

J. E. MAYER, ESQ., Deputy Inspector-General of Hospitals Presidency.

MEMBERS.

P. GERALD-FITZGERALD, M. D., Surgeon, 4th District.

W. J. VANSOMEREN, M. D., Surgeon, 1st District.

Senior Department.—Lane student B. Evers was the only eléve in this department who came up for examination, and he has acquitted himself in a highly creditable manner. In almost every subject he attained the highest mark, while his written papers discover a facility of expressing himself correctly and well, not often met with among the alumni of this College. At the instance of the Committee he dissected the neck remarkably, neatly and carefully, and the operations performed in presence of the Members of Committee, though wanting that dexterity which practice only can secure, tested his acquaintance with practical surgery, and proved it to be very fair.

Second Department.—Eleven pupils in this department of the College subjected themselves to examination, and with them 2nd Dresser Cajah Furreed Oodeen who aspired to the grade of Assistant Apothecary, and Assistant Apothecary W. D. Stewart, who, having left the Medical College after a very short curriculum of study, and found that fact adverse to his advancement, determined to place himself, as soon as possible, on a level with the best educated men in the service to which he belongs. He has accordingly for the last two years, taken advantage of his appointment to the General Hospital, to prosecute his studies in the College, with the view of submitting to the full and final ordeal that candidates for his grade have generally to pass. In this examination he has been pre-eminently successful. He obtained the highest mark in every subject but one, and, in that one, his attainments were noted as good. His papers were exceedingly well written, and do him the greatest credit; and the Committee feel certain that few have left this College so thoroughly well prepared for practice and with such high promise of success as Assistant Apothecary Stewart. To Cajah Furreed Oodeen the same favorable testimony cannot be borne. While giving him every credit for laudable aspirations, the Committee regret that he has shewn himself so much below the standard of qualifications necessary for the position he desires to occupy.

The eleven students of the Second Department have all passed, but with very different degrees of merit. Tyrrell and Doyle are at the head of the list, while Francis has narrowly escaped rejection. Before concluding, the Committee beg to express their thanks to the Principal of the College and the Professor of Anatomy for an opportunity of testing the Anatomical attainments of this class by actual dissection. With the exception of Cajah Furreed Oodeen, the youths dissected well the parts set them, and those who were called upon to demonstrate on the dead body performed the task most creditably. The Committee recommend the continuance of this arrangement in future examinations as an efficient means of inducing the students to keep up their knowledge of so important and fundamental a subject as Anatomy.

Junior Department.—In their examination of this Department, the Committee bore in mind that " these men are not employed or paid as doctors competent to treat serious diseases," and that " their duties are or ought to be, of a very mechanical nature." The standard of examination was, consequently, fixed very low, but even that low standard, though reached by some of the pupils, was barely reached by most, and not approached by others. In passing the whole class of thirty-one members out of the College, it therefore behoves the Committee to state that, though able to perform the minor and mechanical duties of a hospital under the direction of a Medical Officer, these young men are quite unfit to be trusted with the medical charge of even a Naigue's guard.

Their knowledge of the Theory and Practice of Surgery and Medicine is exceedingly scanty, and many years of accurate observation and diligent study in a hospital will be necessary to qualify them for such responsible duties as are at present performed by many *first* and *second* Dressers in the service.

(Signed) J. MAYER, Depy. Inspr. Genl. of Hospitals, President.
(„) P. GERALD-FITZGERALD, M.D., Surgn. 4th Dist. } Members.
(„) W. J. VANSOMERAN, M.D., Surgn. 1st District. }
MADRAS, *8th May* 1865.

(True copy.)
GEORGE SMITH, M.D.,
Principal Medical College.

* * *

Read the following letter from the Director of Public Instruction.

(Here enter 22nd June 1865, No. 1409.*)

ORDER THEREON, 21st September 1865, No. 266.

The Governor in Council does not deem it necessary to make any special remarks on the foregoing Report on the progress of the Medical College during the official year 1864-65. The general tenor of the reports of the Principal and Professors, and of the Committee who conducted the final examination of the students leaving the College, is very similar to that of the reports of the last few years, though perhaps more favorable in some respects. His Excellency in Council will look with interest to the results of the changes introduced on the recommendation of the Committee which met in November last, and which, he trusts, will prove conducive to the improvement of the College.

2. The Governor in Ciuncil requests that the thanks of Government be tendered to Dr. Montgomery for the valuable gift of books presented by him to the College Library.

(True Extract)
A. J. ARBUTHNOT,
Chief Secretary.

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* Printed separately as Selection No. LXXV.

BOOKS RECEIVED.

1.—A Clinical Memoir on Certain Diseases of the Eye and Ear, by J. Hutchinson, F.R.C.S. &c.	Churchills, London.
2.—Clinical Lectures and Reports, by the Medical and Surgical Staff of the London Hospital, vol I, 1864.	Do
3.—Surgery in Bengal, an address by Dr. Fayrer......... ..	Calcutta, Carter.
4.—Report on the Madras Medical College, Session 1864-65	Gants Brothers, Madras.
5.—Report on the Civil Hospitals and Dispensaries of the Madras Presidency, for the year 1864	Do
6.—Report on Vaccination in the Presidency and Provinces of Madras, in the year, 1864..	Do
7.—A Popular Lecture on Vaccination, by Dr. Shortt......	Do
8—A Treatise on the Small-pox; translated into Canarese by S. Arokeum Pillay, Second Dresser....................	Mysore Government Press.

PERIODICALS RECEIVED.

The American Journal of the Medical Sciences to *October* 1865.
The Edinburg Medical Journal to *November* 1865.

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THE MADRAS
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PART I.

ORIGINAL ESSAYS.

Art. I.—*Notes on Delirium Tremens, and its treatment by Ipecacuanha.* By W. Farquhar, M.D., Garrison Assistant Surgeon, Bangalore.

Besides giving the result of a practical, though limited, experience of the employment of ipecacuanha in this disease since first using it more than two years ago, I have also endeavoured to show that the powers of the remedy in dealing with the disease are strongly confirmed by theoretical considerations based on the known therapeutic actions of the drug. The gradual accumulation of such evidence in the course of reading must form my apology for treating the subject at such length.

Looking, however, even to the possibility of my having over-rated the capabilities of the drug as applied to this disease, I have tried to give the entire subject such a general turn as to prevent my remarks being, in any event, altogether useless. In order to give my views as to some of the ways in which the remedy has proved useful in practice, and adhering also to the idea of treating the matter, at the same time, from a theoretical stand-point, I will, at the outset, offer some observations and produce some of the more generally received opinions as to

What is Delirium Tremens? Although the distinguishing characters of the fully developed disease are very uniform, it is curious to trace the very different views that various writers and practitioners have, from time to time, taken of its pathology. The descriptions of the *rationale* of the disease, are not only varied, but in many instances opposed to each other, and after ranging them together, it seems almost impossible to detect any thing like a thread of harmony running though the whole. At one time, it was looked upon, and treated as entirely dependent on "Congestion or inflammation of the brain," but it soon became apparent, that this could only be said of it, in some particular cases. Some writers represent the disease as being "akin to inflammation of the brain," while others have viewed it as "the very reverse of inflammation." It is also variously described as "a peculiar excited condition of the nervous system," or a "heightened activity of the sensorium," "anæmia of the brain," "an exhaustion of the nervous system," or as "a brain below *par*." It has also been held to be "a perverted nutrition of the brain," "nervous irritation of the brain," "disorganization of the nervous substance," "a loss of tone of the vessels of the brain." At this date even, the symptoms are by some referred to "subarachnitis," "meningitis," or "phrenitis." Recent observations are supposed to confirm the view, theoretically advanced in 1828 by Leovèille, (vide Aitken's Scien. and Pract. Med.) that delirium tremens "consists in an exalted state of the vital powers of the brain, excited by molecules saturated with alcohol, absorbed from the surface of the stomach and bowels, and carried into the current of the circulation." According to Brown-Sequard* "increased reflex excitability of the nervous centres is one of the most important elements of many neuroses, as delirium tremens, &c."

It would not be very flattering to medicine, either as an art or a science, to suppose that only one of these many views is the correct one, and that all the others are wrong, and the treatment therefore in most cases inappropriate. It is more rational to suppose, nay more, it must be conceded, that the disease has in reality presented itself in very different forms and aspects, and has therefore yielded to remedies opposite in their action to each other.

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* Vide *Lancet* for January 27th, 1866.

Though remarking that the disease presents itself under various phases, it is only conformable to the nature of things to infer that a disease exhibiting a group of symptoms so characteristic and so easily recognized, must in its essence be dependent upon some one abnormal condition, organic or functional, of the nervous system, and that the variety in its appearance is really attributable in most cases to something superadded to the disease, in other words, to some one of its numerous complications.

I repeat, then, that in delirium tremens we have a disease which may be assumed to have some one essential feature, and which may be engrafted on any kind of constitution, sthenic or asthenic, and be attended by many complications, either obscuring, over-riding or adding to the danger of the intrinsic disease.

It falls to the lot of very few, to treat a sufficient number of cases of this protean disease to enable them to take a comprehensive view of it in all its bearings, and it is easy to see that some of the above-mentioned discrepancies have arisen by hasty generalizing from individual experience.

I would here draw attention to the complications which frequently attend the disease, and which have an important influence on its course and duration, and therefore on its treatment. I instance gastritis (by many regarded as the *fons et origo mali*) of various degrees, hepatitis, duodenitis, dysentery, pneumonia, influenza, pleuritis, bronchitis, pulmonary congestion, and the various affections of the brain and its membranes, with which, in my opinion, as already stated, delirium tremens has sometimes been confounded. Dr. Craigie (vide Aitken) remarks that " all the spirit " drinkers whom he has seen or known, have been either " subject to chronic cough or dyspnœa or have laboured " under chronic, dry bronchial disorder, with asthma."

There is one feature of the disease which it is important to notice, viz., that even in sthenic subjects, symptoms of an adynamic form very soon set in, if delirium continue, and the patient be not relieved, by Nature's restorer, sleep. Several things may be said to contribute to this result ; the blood poisoning, long abstinence from food, and the great expenditure of nervous energy caused by the incessant movements and restlessness of the patient.

It is to be regretted that the scalpel has failed to give much more satisfaction than the theoretical notions held regarding this perplexing disease. In some cases where the disease was treated as inflammatory, nothing remarkable was found either in the state of the brain or its coverings; in other cases treated heroically by opium, undoubted evidence of inflammatory action has been observed. In some instances, nothing was discoverable beyond an unusual amount of serous fluid in the ventricles of the brain. There is no possible room for doubting, that in many cases treated by narcotics, the *post-mortem* examination revealed the effects of the treatment and not of the disease; for I read that sometimes after a large dose of opium the patient has become "ungovernably delirious," "raving mad," then "weak and exhausted," and, following another large dose, a train of low symptoms and death! and sometimes without arousing any suspicions that the treatment had something to do with hastening, if not causing, the fatal result. This use, or rather abuse, of opium, has been caused by the belief with some Medical men that the patient "must sleep at all hazards," "must sleep or die." No doubt this is true, but the estimate does not always seem to have been sufficiently careful, as to *when* the patient *must* sleep.

It may not be out of place to here pass in review the chief modes of treatment that have been in vogue for this disease. We find these to include every possible variety from energetic "blood-letting" to the "do-nothing" system of treatment. First in the list comes opium. This agent has been looked upon with the greatest favour, and has held its ground for the greatest length of time, and it is beyond cavil, that no other medicine has as yet achieved so great an amount of success, or, as might be said, hit off so many cases successfully.

In opium, too, we have a fair example of heroic medicine, for in this disease it has been given in doses varying from ½ a grain to 15 grains every two hours* till sleep or death has followed. Beyond what has been already said of the effects of opium, I may add that the long continued use of opium has been known to produce delirium tremens. For further arguments against the use of opium, I refer to an essay by Surgeon-Major Ranking "On the Therapeutics of Delirium Tremens."—Vide *Madras Quarterly Journal*, No. VI.

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* Vide Copland's Med. Dict.

Opium, combined with Tartar Emetic, as practised and advocated by Dr. Graves, has also been very successful against some forms, and in certain stages of delirium tremens. The treatment by digitalis, which, I observe, was used in doses of one and two drachms some 30 years ago in America, has also been revived and has been credited with success, in some serious forms of the disease. But as in the case of opium no unbiassed judge can deny that it is a hazardous and unsafe remedy.

The more recent treatment by chloroform has been attended by very various results, in the hands of different practitioners, and a larger experience of it is necessary to establish its reputation as a safe agent for general use.

At one time drastic purgatives alone were spoken of as being curative of the disease, and, doubtless, they may have proved very serviceable in those cases which were kept up by hepatic complication. Capsicum has been extolled by some West Indian practitioners, but it is not easy to see how it can be of benefit, except in cases requiring a local gastric stimulant.

I now touch on the latest and, perhaps, the most successful method of managing the disease. I allude to the expectant treatment, aided by measures calculated to support the system, while time is given to eliminate the poison. While believing that, in the majority of cases (where this plan is practicable), nothing better can be done than to adopt it, I am of opinion that in many cases something more is required; I also think it strange that delirium tremens should have been selected as the most favorable of ailments on which to illustrate the *vis medicatrix naturæ.* I cannot conceal my belief that the very unsatisfactory and conflicting results of treatment have tended more than any thing else to this issue, for it requires a larger experience than most practitioners have of the disease, to enable them to resist the urgency there seems to be to do something for the patient.

Besides cases of the pure and simple disease, then, there remain to be dealt with a number of cases having complications, sometimes as formidable as the disease itself; there also remain those mixed cases where it is doubtful how much of the symptoms is due to delirium tremens or to encephalitis in some degree or form.

Granting, then, that the natural powers, aided by supporting diet, regimen and seclusion, are competent to bring about recovery in a large proportion of cases, the question then arises,—Is there any medicinal agent competent to meet those cases in which the interference of art *is* required to subdue the disease, and that would also be serviceable in most of its complex forms, or at least would not be contra-indicated in almost any of the diseases usually associated with it. I believe that in Ipecacuanha we possess such a remedy.

I am aware that many objections, founded on the more obvious actions of this drug, may be started against its employment here, and it is mainly by presenting on one hand what are supposed to be the features of the disease, and by holding up on the other hand, a picture of the virtues of the drug as drawn by those most familiar with its use, that I hope to prove that ipecacuanha in varying doses will fulfil more of the requirements in the treatment of this disease, than any other known remedy; while, at the same time, it is far less precarious than any in its action.

I may here quote briefly what led to the trial of this remedy, and the impressions I first formed of its powers, and which I recorded in the annual report of the Garrison Hospital, for 1864.

"I avail myself of this opportunity of bringing to notice the very satisfactory effects derived from the exhibition of ipecacuanha in delirium tremens. The use of this remedy was suggested to me by recollecting that in the practice of Dr. Cowpar, Civil Surgeon of Singapore, large doses of this medicine had been found most valuable as a sedative in allaying the fierce excitement occurring in the case of strong European sailors, admitted into the Seaman's Hospital there, and who had been drinking freely of the various vile compounds sold as liquor in that place. It soon appeared that among the broken down, hard-drinking pensioners who chiefly furnish cases of delirium tremens to the Garrison Hospital, Bangalore, no similar cases were likely to present themselves that would furnish a fair trial of this particular action of ipecacuanha. Reasoning, however, from the very beneficial action it exerts as a sedative and calmative, both to the circulatory and nervous systems, and locally to the mucous membrane, in cases of dysentery, it occurred to me to test its action in delirium tremens, when used as the sole remedy throughout the disease. The result of the limited trial that the Garrison Hospital has afforded has been so favorable as almost to impress me with the idea that its action is directly or indirectly antidotal to the disturbances set up in the system by the excessive use of alcoholic stimulants. This remedy, unlike opium, does not complicate the natural course of the disease, while its beneficial action is too manifest to permit of its being set down as merely of negative value.

"While believing that delirium tremens may be conducted to a safe termination under an eliminative and nutritive or a merely expectant treatment, I should feel disinclined to look idly on, while possessing a remedy, which, as far as has yet been tried, seems to bring about a speedy abatement of the more distressing manifestations of the disease.

"During the employment of this treatment, stimulants of all descriptions have been excluded, and only 2 or 3 pints of chicken mulligatawny, in addition to spoon diet, have been given in 24 hours. It has not been observed that ipecacuanha had any tendency to cause loathing of food ; on the contrary, patients seemed to take their food more readily than is usual in this disease ; this seems explainable on the supposition that the medicine is antagonistic to the extra-vascular and irritable state of the mucous membrane causing the anorexia. Vomiting has been an exceptional occurrence, and only took place when large doses ℈ ii. or ʒ i. were employed. I should expect to find it still more useful in private practice, where a simply expectant treatment cannot so readily be carried out. It would, I believe, go far to remove the intense craving for more stimulants which friends of the patient find it so difficult to control, and by lessening the distressing excitement, would relieve the medical attendant from committing himself to the hazardous and uncertain treatment by opiates."

I now give short abstracts of the cases in which ipecacuanha was of benefit; but as it was given tentatively and experimentally, I refer rather to what is stated in the text for my views as to the mode of use, than to the cases themselves, which, I own, are very imperfect, inasmuch as many details are omitted which would have been originally entered, had I known the cases would ever be subjected to criticism or challenge.

The cases marked ** and †† represent second admissions of the same two individuals.

CASE No. 1.—A European pensioner, aged 46, admitted 16th March 1864. A confirmed drunkard. Had been drinking ten or twelve days all sorts of liquor and taken little or no food. Could not ascertain when he had last slept.

Was trembling all over, restless and distressed. Tongue very foul; pulse full and soft. Up to morning of 21st had been taking every 4 hours, draughts of Træ. Hyoscyam in effervescing Citrate of Ammonia, but without producing sleep. Ordered to take P. Ipecac. gr. x., Træ. Opii. ♏ x., made into two boluses and given every 4 hours. Next morning he was found sleeping; he had slept since 4 P. M. of the previous day, after taking two doses of Ipecacuan. On 24th March he was discharged. I do not lay much stress on this case, as the medicine was here combined with a little opium, and because the *post hoc* argument might be applied to it, but I mention it chiefly as being the first in which it was tried.

* CASE No. 2.—An East Indian pensioner, Ætat 32, admitted 8 A. M. 21st May 1864, after morning visit. Was incoherent but quiet and without tremors; pulse full and soft; skin natural; tongue clean. Could not ascertain when he had slept. Took P. Ipecac. gr. v. twice before evening when I saw him and prescribed ℈ ii. of Ipecac.

22nd.—Was very restless and troublesome during the night, and at one time quite furious. His talk is now incoherent with busy delirium; fancies snakes, &c., about him; conjunctivæ injected; pulse full and quick; skin covered with perspiration; is very restless. Repeat P. Ipecac. ℈ ii. statim, cold douche to head. *Vespere.*—More quiet, but still talking irrationally; no effect seemed to ensue from the Ipecac.; but that of making him quieter, took 10 grains at noon, give ℈ ii. immediately.

23rd.—Improved. Less excitement, but no sleep. P. Ipecac. ʒ i. statim, cold douche to head. *Vespere.*—An hour after the medicine, he vomited a large quantity of fluid, (not bile) and bowels were opened four times. Immediately after vomiting, he fell into a sleep for an hour and a half, and slept at intervals during the day. After first awaking, he was quite composed and talked rationally.

24th.—Perfectly calm, rational and able to give an account of all that happened to him before admission. Complains of being very hungry. From this date no return of any symptoms, but as he was "feeling weak" he was detained till 30th May, when he was discharged.

† Case No. 3.—A European pensioner, Ætat. 50, admitted 30th May and ordered 10 grains Ipecuouan every 4 hours.

31*st.*—No sleep; kept walking about all night. Fancies people are going to kill him. Tongue clean; bowels not moved; pulse frequent. Continue Ipecac.

1*st June.*—Was troublesome and did not sleep all night. Pulse 128, small in volume. Is in great fear of the sentry killing him. Ordered P. Ipecac. gr. v. every 4 hours.

2nd.—Was very troublesome till midnight, when he slept an hour, and then got up to walk about, but remained very quiet. Is now moving about and talking a great deal. Speaks of his bodily ailments, and says something is the matter with his heart. After a little he sobbed and cried, like a hysterical woman. Cont. P. Ipecac grs. v. Continue diet. To have 6 eggs made into flip for the day. A few minutes after visit, passed a *very black* motion in the ward. *Vespere.*—Slept nearly the whole day. Is now perfectly rational, and says he feels quite well. Took no medicine to-day, Pulse 84, normal in volume.

3*rd.*—Slept all night.

4*th.*—Quite well, discharged.

Case No. 4.—A European, D.P.W., Ætat. 43, admitted 31st May, after visit, "dead drunk." *Vespere.*—A strong powerful man, face intensely flushed. Pulse full and frequent; bowels not moved for some days, took on admission P. Ipecac. ℈ i. which acted freely as an emetic. Has taken 10 grains twice since. Is now quite rational and says he has "got a bilious attack."

1*st June.*—Passed a sleepless night, but gave no trouble. Find him standing at the window, "waiting for his grog." Pulse 126; tongue florid and very raw about the tip. Continue P. Ipecac. gr. x. every 4 hours. *Vespere.*—Has been more excited and not so much under control during the day. At 2 o'clock took P. Ipecac. ℈ ii. which had a quieting effect on him. Complaints of his throat, which is intensely red; and there are white patches on the soft palate. Has slight tremors, *2nd.*—Was rather excited in the early part of the night, but was afterwards quiet and slept for an hour or so, about 9 o'clock. Again complaining of his throat; says he can only swallow liquids. Ordered Poppy decoction as a gargle. Continue P. Ipecac. *Vespere.*—Has been sleeping nearly all day, and has, therefore, taken no medicine; pulse 118; skin moist, complaining of throat for which liniment saponis et opii is ordered externally. Has had four copious, dark bilous motions from Infusion Senna ordered in the morning.

3rd.—Slept nearly all night. Had 2 scruples Ipecac. given late. Is perfectly rational and from this date he remained free from all symptoms of delirium tremens. Complains of pain in throat, along œsophagus, and in epigastrium. These symptoms of severe gastritis set in and proved troublesome. He continued in Hospital till 17th June.

† CASE No. 5.—Admitted 18th January 1866, 1 P.M. with these symptoms:—violent shaking of the extremities; ferrety eyes; foul tongue, occasional incoherence; loud calling; pulse frequent and small; skin moist. Been drinking hard since Xmas. Had before admission, two glasses of beer, which, with brandy, has been his chief drink. No sleep for three or four nights. Ipecac. was given in 10 grain doses, twice a day from admission. In this case each dose was rejected in an hour after taking.

19th.—No sleep; is not so excited, but is more shaky; tongue very foul. Apply sinapism to epigastrium, before taking Ipecac.

20th.—Very quiet, less trembling; eyes natural; tongue clean; pulse stronger; skin normal. Walked about all night, and fell down several times from unsteadiness. Continue Ipecac. in grain v. doses.

21st.—No sleep. Not improved; delusions returned. Continue Ipecac. in 10 grain doses.

22nd.—Had a good night; is quite sensible and talks coherently. Omit P. Ipecac.

23rd.—Complains of tightness across the chest and dyspnœa. Sinapism.

26th.—Find a large anthrax over right gluteal region, anthrax to be strapped with adhesive plaster. This kept him in Hospital till 6th February.

CASE No.6.—A European pensioner, Æt. 50, admitted 2nd

October 1865, after the visit. A healthy-looking, florid complexioned old man, brought to Hospital by the Police, having been made a prisoner for snapping a pistol at a sentry. When seen by me at 1 o'clock, he was moving about rather restlessly, but was quite sensible and coherent. Extreme tremors of the hands; pulse feeble; skin soft and moist; tongue very little coated; conjunctivæ not injected. Did not sleep last night; says he has been drinking brandy freely and long; talks occasionally of seeing snakes, and hearing people whispering. On admission, at 10 A. M., took P. Ipecac. ʒ ss., and shortly before 1 o'clock he had taken another ʒ ss. dose through the Apothecary misapprehending my direction. No vomiting ensued. *Vespere.*—Much quieted. Tremors scarcely perceptible.

3rd.—This morning is greatly better, was quiet all night, but did not sleep much. Bowels moved this morning, but not freely. Continue P. Ipecac. in 5 grain doses.

4th.—Quiet and sensible; no tremors; no delusions; tongue clean; skin natural; slept nearly all night.

5th.—Very well, only troubled in mind about the Police business.

9th.—Discharged.

* CASE No. 7.—Was admitted yesterday evening, 3rd January 1866. Had been drinking since 24th December last. Complains of headache and thirst. Is trembling all over. Tongue dry and coated; skin hot; pulse quick and full; delusions. Has a feeling of sickness at stomach. Took P. Ipecac. ʒ ss. on admission, and had it repeated twice in the night.

5th January.—Had no sleep, but is more steady. Cont. P. Ipecac. in 10 grain doses.

6th.—Improving. Continue P. Ipecac. in 5 grain doses, with a large dose at night. Was ordered a mixture of Liq. Ammonia Acetatis to allay thirst.

8th.—Much better, is anxious to go out.

13th.—Discharged.

CASE No. 8.—A European pensioner, aged 45, came in between 1 and 2 o'clock yesterday under the influence of liquor. Was very shaky, restless and talkative, looked about him suspiciously and fancied himself in a room, where he also imagined he saw somebody who did not exist. On admission the Apothecary gave ʒ ss., P. Ipecac. and at 10 P. M. P. Doveri grs. x. were also given. Skin now cool; tongue coated with a white fur, but brownish in the middle. Has not slept for some days. Has been leading a vagrant life, and drinking hard, for some days, of country liquor; but has been tippling for a month. P. Ipecac. in 10 grain doses.

26th February.—Better; less tremors; skin cool; tongue clean; bowels have acted this morning. Was quiet and seemed to sleep all night, was a little sick about an hour after first dose of Ipecac.

28th.—Remains steady without any fresh symptoms. Is very restless at night. Continue P. Ipecac. in grain v. doses.

2nd March.—Has been doing well since last report. Omit P. Ipecac.

4th.—Discharged.

The diet, in all these cases, consisted of 2, 3 or 4 pints of chicken pepper-water, in addition to spoon diet, in 24 hours. Once or twice a few eggs made into flip were given.

I here notice a case occurring in the practice of another Medical Officer, and where ipecacuan was tried at the last, but was said to do no good as it was rejected. I give the case for what it is worth. The case (an officer) having, after recovery from delirium tremens, been left in this station, fell to my care, and I came into possession of his history, as reported in his case, which was shortly thus:—

" *2nd November* 1864.—Addicted to drinking. Was seized with an epileptic fit on parade. Up to 3rd November had a succession of fits, with great irritability of stomach and occasional vomiting throughout.

5 P. M. *3rd.*—Was found labouring under "unmistakeable delirium tremens."

6th.—Was visited every two or three hours and was in a critical state. Digitalis in large doses was being given, and the dose taken this day rejected. In consultation with a Senior Medical Officer, digitalis was abandoned, and on the strength of the favorable accounts of ipecacuanha, it was tried in the afternoon; 10 grains were given "in a little fluid only." Report says, "vomited the ipecacuan soon after taking it, and his stomach has been irritable since. Bowels moved, urine has been freely passed, pulse 100. Is inclined to sleep. To continue broth only.

7th.—Better. Obtained sleep from about 8 till 11 P. M., and also afterwards at different intervals during the night. This morning he is quite sensible. No delusions. Pulse 86." No record of any vomiting afterwards.

As the stomach in this case had been irritable all along, and as the ipecacuan was given with a little fluid, which I always avoid, it was not wonderful that it was brought up. But as the efficacy of the medicine does not (as I will try to shew) depend on its (incidental) emetic effect, I conclude that a useful amount had been retained. Whether this be the case or not, the very favorable report next morning shews, at least, that if it did no good, it did not do harm, even in a critical case where it might have been supposed to do so.

I also administered ipecacuan in a good many cases of ebriositas, not from any idea that treatment was necessary, so much as to watch the behaviour of the drug, especially with reference to the tolerance of it or otherwise; and in these cases also there was far less nausea and depression caused, even by its continuous exhibition, than might have been expected. It may be remarked that in the description of these cases, there is, so to speak, a lack of incident as indeed there was in the cases themselves, compared to what I had personally experienced in the treatment of delirium tremens by opium; and with reference to this point I am tempted to quote the words of a very able and observant writer—the late Dr. Geddes, of the Madras Medical Service—when touching on his first experience (vide *Madras Medical Reports* for 1831, p. 143) of ipecacuan, in the treatment of cases of dysentery:—" The cases of dysentery appear to have been " of a mild nature. In comparing the violence of any dis- " ease, however, at different periods or stations, or in differ- " ent hospitals, although it may appear a truism to remark " it, it nevertheless does not seem to have been sufficiently " attended to, that, if one system of treatment is better than " another, let the abilities of the Medical Officer biassed in fa- " vor of the worst system be what they may, the cases treated " under the more beneficial plan may appear generally of a mild " description and be convalescent at an early period: while " all those under another treatment, although perhaps even- " tually saved, become in the course of their progress, violent " diseases, requiring active remedies followed by a lingering " convalescence, and inducing the Medical Officer to attribute " to the particular severity of the complications, symptoms and

" results which might never have occurred under another " mode of treatment."

While remembering what I had incidentally heard of the use of ipecacuan as an initial treatment of cases of ebriositas and delirium tremens, attended with violent excitement, I was not aware whether this was an original idea or not; and to investigate this point and also to see whether I had been anticipated in the systematic and continued use of the remedy in delirium tremens in asthenic cases as well, I turned up all the clinical records at my command, that were likely to throw light on the subject; and I was not long in finding a letter by Dr. Higginbotham (see *Lancet* for April 1855) that ipecacuanha had been already used as a " cure for periodical drunkenness." I also notice in Vol. xxxvii, p. 40, of " Braithwaite's Retrospect," that the same able practitioner gives a large dose of it at the commencement of the treatment of delirium tremens, as an emetic and sedative, exactly in the way that I first heard of its use.

In the letter above referred to, properties are ascribed to this medicine which one would have expected to lead to the use of it in the systematic way I am now advocating. The letter runs thus:—" I would recommend ipecacuanha as a " remedy for drunkenness, taken in half drachm doses as an " emetic. Ipecacuanha has the extraordinary property of " stimulating the whole system, equalizing the circulation, " promoting the various secretions, and, indeed, assisting " each organ of the body, to perform its function, and to " restore it to its natural state.

" Ipecacuanha can be taken with perfect safety as an eme" tic; on that account it is preferable to tartar emetic. I " believe the administration of half a drachm of the powder " of ipecacuanha as an emetic to be a " cure" for *periodical* " *drunkenness*." Whether in such cases the virtue of the remedy really depends solely on its emetic and lowering effect, I do not undertake to say, but in bringing it to notice as an agent in the treatment of delirium tremens, it will be my endeavour to shew that ipecacuan in repeated large or small doses according to the case, has other properties, varying with the dose, which are only too apt to be lost sight of, in the more obvious, I may almost say incidental, action of it as an emetic, which effect is in most cases rather to be guarded against, when it does occur, than solicited.

As with respect to the nature of the disease, so here, I prefer using wherever I can the language of others whose experience and ability carry far more weight than any thing of my own that I might have to offer.

Here, meanwhile, I notice that in a further search after the virtues of ipecacuan, and as if to prove that there is nothing new under the sun ! I find a writer in the *London Medical Repository and Review*, vide Vol. vi. 1828, p. 184, while criticizing the use of sulphuric acid as a cure for intemperance, by Dr. Brinckle of Philadelphia, remarking that after sulphuric acid, " the inclination for the use of " spirits, or even of wine or porter, never recurred. Dr. Brinc- " kle has found that the Tincture of Ipecacuan produces the " same salutary effects."

If now, while proceeding to trace the physiological actions of ipecacuan, we carry in our mind the chief indications for treatment in delirium tremens which are—to tranquillize the patient, to eliminate the poison, to correct vitiated and to restore suspended secretions, to sustain the powers of life, and to procure sleep ; and also keep in view the more frequent complications of the disease as already noticed, I am hopeful that I will have proved the position which I wish to establish, viz., that where medicine is actually required in the treatment of such cases, Ipecacuanha is more likely than any other to perform good service.

I now give the following masterly *resumè* of the actions of the drug taken from Dr. Joseph Ewart's Essay on Tropical Dysentery :—" Ipecacuanha produces all the benefits that " have been ascribed to blood-letting, without robbing the " system of one drop of blood ; it produces all the advantages " of mercury and other purgatives without their irritating " action : it produces all the good results of antimonials and " sudorifices without any of their uncertainty ; and it pro- " duces all the beneficial effects ascribed to opium, without " masking if not aggravating the disease, while the mischief " is silently accumulating within. Thus it may be said that " we possess in ipecacuan a direct and safe antiphlogistic, " a powerful and capital sudorific, an unirritating purgative, " a certain cholagogue, a pancreatic stimulant, and a harmless " sedative to the heart and muscular fibres of the large intes- " tine. I can give no better explanation of the manner in " which this medicine operates, but those who search deeper

" will not fail to perceive that much remains to be elucidat-" ed before the true physiological action of the remedy can " be fully understood."

Again, to shew how it would meet cases where there is hepatic derangement; hindering the elimination of the poison and aggravating and prolonging the disease; in the *Madras Medical Reports for* 1831, Dr. Mortimer thus writes:—" A " strong impression has been left on my mind in favor of " the influence it appears to exert in correcting vitiated " secretions of the liver, and procuring a uniform discharge " of healthy bile."

In the *Army Medical Report for* 1863, the experience of Staff Surgeon H. H. Massey, M.D., is recorded regarding the successful employment of ipecacuan in hepatitis—a treatment which he had adopted from observing how useful the remedy had been in cases of hepatitis, co-existent with dysentery.

For further description of the uses and actions of this remedy by practitioners of a later date, I refer to an able paper in *Madras Quarterly Medical Journal*, No. iii, entitled, " Mr. Cornish's remarks on the treatment of Acute Tropical Dysentery by large doses of Ipecacuanha." I take this opportunity of quoting from the same paper a case by Dr. Mackay, such as many must have seen, shewing that in dysentery (and so I believe in delirium tremens) the otherwise depressing effects of this medicine are expended in curing the disease and restoring to health patients in whom prostration and debility were so great as to appear to contraindicate the remedy.

" CASE No. 1.—Was brought to hospital supposed to be in " a dying state. The patient, a pauper, was weak, emaciated, " almost pulseless from disease, exposure and starvation. " For three days blue pill with acetate of lead and opium were " given, but without any beneficial effect. On the fourth " day, the motions were very frequent, and consisted of nothing but blood and mucus; without much expectation of " its doing good, I ordered Tinct. Opii. ♏. xxv., to be followed " in a quarter of an hour by Ipecacuanha gr. xxv.; from " this time he improved; the motions first became less frequent; the ipecacuanha was continued in smaller doses, " and the following day the evacuations were quite free from " mucus and blood."

Again, small doses of ipecacuanha are often very useful in arresting internal hæmorrhage. This power of controlling the circulation of the extreme vessels, would evidently prove very serviceable in the disease now under consideration, for several of the various ideas regarding the state of the cerebral circulation in delirium tremens may be reduced to the simple condition—irregularity—and this inequality of circulation takes place also in the lungs, as, according to Aitken, alcohol "is found unquestionably to retard the " motion of the blood."

In hæmorrhage there is a fine example, as quoted by Waring, of the powers of this drug, "and this procedure (the " giving the remedy in small doses to produce nausea, by " Mr. Trenor) was attended with marked benefit, arresting " the hæmorrhage and restoring heat and life to patients " who were in a state of collapse from loss of blood."

I also indicate a possible way (supposing the premises to be true,) in which ipecacuanha might prove useful in delirium tremens with pulmonic complication, and where the tendency is to death by asphyxia. According to Aitken, "the effects " produced (by alcohol,) on the *medulla oblongata* tend to " sustain this toxic effect (retardation of blood in the capil-" laries) upon the lung." In "Waring's Therapeutics", Dr. Tyler Smith is thus quoted:—after speaking of the emetic effect of ipecacuanha in uterine hæmorrhage and menorrhagia; "but beyond this it appears to have a special action " on the uterus, increasing its contractile power beyond what " could be imagined to occur from the merely secondary " effects of vomiting." He adds "Ipecacuanha then appears " to influence the *medulla oblongata* and the lower *medulla* " *spinalis*. This double action of ipecacuanha upon the " two extremities of the spinal centre, is very extraordinary."

I would now say a word or two anent a prominent objection to the remedy; viz., the probability of its inducing vomiting in cases where it did not previously exist, and aggravating it in those cases where this symptom is already troublesome. Vomiting has, considering the number of doses given, been rather an exceptional occurrence, and has taken place chiefly after the first dose. It will be seen in the case last quoted that vomiting appeared actually to be checked by the drug. In none of the cases was any precaution taken, excepting abstinence from liquids, against the production of emesis, but where necessary, I would employ measures to prevent as much as possible this effect. Where vomiting depends on irritation of the liver or a congested state of the mucus membrane of the stomach, I believe that, even if the remedy temporarily added to it, relief would very soon follow. But I do not insist on its utility, or the necessity for its use, in this class of cases, which, as Dr. Blacklock (See *Madras Quarterly Medical Journal*, No. xi., p. 114) remarks, are almost always " good cases."

In " Pringle's Army Diseases, 2nd Edit. 1753," I read that " after bleeding, the patient is to be vomited with " *ipecacuanha* ; which removes the sickness at stomach, so " common in the beginning." I have even read of ipecacuanha being recommended in cases of intractable vomiting, when all other means had failed. It might also be objected that ipecacuan would increase perspiration, which is already excessive. But I would remark that it causes an active diaphoresis in substitution of the diaphoresis in delirium tremens which is of a passive nature.

It is worthy of note, that the peculiarities of the action of the remedy, and the tolerance of it that there was in this disease, attracted my attention as much as the good results that followed from its use. I say peculiar action, inasmuch as it had no noticeable or untoward operation in producing vomiting, depression or anorexia, and, different from its action in dysentery, doses of 5 or 10 grains, are not more productive of sickness than large ones.

In setting about treating a patient I seize upon the prominence of excitement or delirium as the measure of the dose to be given. If the patient is very troublesome, and the pulse is not positively failing, I give two scruples of the drug, made into an electuary with honey or fresh mucilage, avoiding for some time the use of any liquid. Should excitement not be abated after four hours, I repeat the dose, and generally this suffices to allay any extraordinary degree of it. The medicine is then continued in 5 or 10 grain doses, till an impression is made on the disease, or till sleep follows, which it *will* do naturally on the removal of the causes producing *insomnia*. When vomiting has occurred, the drug has been continued, as in a case of dysentery, till relief of the more marked symptoms ensue.

Assuming for a moment that I am correct in my supposition that ipecacuanha possesses a marked power over the disease, and given an extreme case where there is pure nervous exhaustion, with delirium unabated, with a rapidly flagging pulse, where, in short, the disease is fast killing the patient, I would then consider whether the vital energies of the patient would be more rapidly spent by the continuance of the disease, or by any possibly depressing effects that the remedy might cause ! Or, as in the case of any disease where the vital powers are at a low ebb, it might be necessary to rouse the system before thinking of applying any special treatment.

I look upon ipecacuan in delirium tremens as being the complement—as far as its effects in this disease are concerned—of the combination of tartar emetic and opium, *minus* the depressing effects of the one element, and the *cerebrum*-exciting tendencies of the other, and as being of more universal application. Viewing it thus, it may not be unprofitable to make a few quotations from " Morehead's Researches on Diseases in India," with regard to the tolerance of nauseating remedies, and the kind of cases most frequently met with in tropical climates—" In fact it has seemed to
" me that in the second stage of delirium tremens, there is
" as complete a tolerance of the emetic action of tartar emetic
" combined with opium as obtains in pneumonia, and this I
" have remarked even in cases in which there had been ir-
" ritability of stomach during the first stage."

Again, " the subjects of the toxæmia which induces deliri-
" um tremens, are very likely to be exposed to the causes of,
" and to be affected with, cerebral determination. It is
" because there is some degree of this combination of cere-
" bral determination in by far the larger proportion of cases
" of delirium tremens met with in European hospitals in
" India, that tartar emetic and cold effusion are so valu-
" able, and the free use of opium and stimulants so danger,
" ous in its treatment."

" In the early stages of the mixed cases, the danger is
" from the cerebral capillary derangement ; there is seldom
" risk from failure of the action of the heart ; therefore an-
" timony and cold effusion may be freely used, but opium
" very cautiously."

" The circumstances in the pathology of delirium tremens,
" which it is of most importance to regard as bearing on the
" probable unfavourable result, are the facts of cerebral
" determination, of the patient having frequently suffered
" from previous attacks of the disease, or of some local

" complication being present—dysentery being that which " will be found to occur most frequently in delirium " tremens in India."

And now, in conclusion, lest I should be thought to lean too much on Art and too little on Nature, I would in a case of delirium tremens, as in any other disease, give full scope to the natural tendency towards recovery, but I would at the same time do what I could to subdue violent symptoms, and to mitigate distress, believing that, in this way, a fair balance would be struck between the *vis medicatrix Naturæ* and the *nimia diligentia Medicinæ*: and also believing that such treatment would, in some instances, save life that would have been forfeited, if committed to the unaided powers of Nature. If further trial of this treatment by others should justify this conclusion, the object with which this paper was written will have been amply fulfilled.

[NOTE.—Since the MS. of this paper left my hands, two excellent Lectures on Delirium Tremens by Dr. Geo. Johnson, have appeared in the *Lancet* for 21st and 28th April of this year. The great stress which is laid on the frequency of fatty degeneration of the heart, might deter many from trying Ipecacuan; but nothing can be urged against it which would not (at Dr. Johnson's own shewing) apply in a greater degree to opium, which he recommends where medicine is indicated, but in the use of which he enjoins extreme caution, as, " where it fails to procure sleep, it may be exercising a powerfully depressing and paralyzing influence on the heart." By the same great authority it is also remarked that " another not uncommon effect of an opiate is to cause nausea and fainting."

With the exception of nausea, the above results could only follow a very reckless administration of Ipecacuan, which possesses the advantage of not requiring so nice (and difficult) a discrimination of cases, as opium. I entirely concur in the very judicious remarks, as to the necessity for feeding the patient well; and it may be necessary to state that I said little about this in my paper, which was in a manner relating the results of experiments which would have been nullified by more than an ordinary exhibition of food.]

ART. II.—*A General and Medical Topographical Report of the Madras District.* By J. SHORTT, M.D., General Superintendent of Vaccination, and late Zillah Surgeon, Chingleput.

(Concluded from Vol. IX., Page 267.)

GENERAL PRODUCTS OF THE DISTRICT.

THERE are no particular *minerals* procurable in this District. *Iron* is met with chiefly on the surface in large lumps or nodules : these chiefly comprise Hæmatitic and Titanic iron ores in the vicinity of the hills both in this place and in other parts of the district. Iron sands are met with in various quantities. The most singular fact connected with the iron sands and ores found in the district, is their magnetic property. Some specimens both attract and repel the magnet, whilst others attract or repel only. They are proved to be rich magnetic oxides, and to contain about 72 per cent. of iron. They are peculiarly interesting from the fact of similar ores and sands from Taranaki in New Zealand having attracted much attention in England, owing to the purity and amount of iron they contain, and being free from sulphur, arsenic, and phosphorus ; they were exhibited during the London Exhibition of 1862. But neither the quantity in which they are met with, nor the expense of fuel in the district, admits of their being worked with advantage.

Lime.—This material is largely manufactured from (cockle) shells of the Cardidæ, along the coast and backwater. It is also met with in a nodular state in various parts of the district : blue nodular lime-stone is met with at Ennore.

Clay.—White ball clay is met with in the vicinity of Conjeveram, and ball clay at the villages of Avady and Coopoor, and fire-clay at Streepermadoor, as also several kinds of potter's clays, brown and black, in various parts of the district.

Granite stone is plentiful, and is worked in several parts of the district, more especially in the village of Mahaballipoorum on the Coast, where many families of stone-cutters or masons reside. Roughly-hewn and coarsely-carved stones are prepared at Mahaballipoorum into pillars and slabs: some of the former are monoliths, and are from 15 to 20 feet or more in length, and from 2 to 3 feet in diameter; these are readily purchased and conveyed to distant parts of the district for the purpose of building Hindu temples and *muntapums*. The granite which is worked is mostly of a coarse description, but fine kinds are also to be met with in the district.

Salt is largely manufactured in the district along the Coast. The principal places are Chunampett, Cheyoor, Covelong, Ennore, Thummumsharee, and Poothootheevakum, where salt-pans exist. The salt is formed by the seawater being subjected to solar evaporation, by means of shallow clay beds of various sizes ridged round with earth, and as the water becomes evaporated, the salt held in solution becomes deposited; the water is let in repeatedly till a layer of sufficient thickness is deposited, when it is scraped up and gathered as required by the Collector each year. The Government holds the monopoly of salt in its hands, and pays the manufacturers at the rate of 14 or 15 Rupees per garce. Some of the Zemindars on the Coast contract to manufacture the salt at the above fixed rate. Here it is stored, as it is manufactured, by Government Agents and sold to the public at 180 Rupees per garce, and the surplus stored in the Government *golahs*. from whence it is again retailed to merchants and others by the Government Agents as required.

Vegetable Products.—Firewood and charcoal are exported to Madras from the district, to some extent, and are chiefly the products of the low jungles of the district.

Fruits.—During the season, *mangoes* of a superior quality, some averaging each two pounds in weight, are largely exported. *Jack-fruit*, these average from 30 to 50 pounds each in weight. *Plantains*, several varieties, inclusive of the large red kind, which chiefly comes from the village of Voyaloor on the Coast, in the vicinity of Sadras. *Limes*, *oranges*, *pumplemoses*, *pomegranates*, *citrons*, &c., are all produced in the district to a small extent, and exported to Madras for sale. *Cocoanuts* are produced in every part of the district, but more especially along the Coast, at the extreme southern end of this district. The village of Alumparwa on the Coast, which is about 40 miles from this, produces them largely, and is famed for its cocoanut plantations. The fruits, and the husks converted into coir, are largely exported, and young plants are also grown here extensively with a view to sale, and for which there is a demand from all parts of the district. The trees fruit well, and I have counted as many as forty nuts on each spadix on several occasions. Two such branches were exhibited at the Local Agricultural Exhibition held here in 1859 ; one of these was from my own garden.

Vegetables (Kitchen).—Almost every variety of country vegetables known in India is successfully grown in the district for local consumption. These are too numerous to detail. All the European vegetables grow and attain perfection during the first four months of the year.

Grains.—Forty different kinds of rice (paddy), ten of millets, and fourteen of pulses are grown. After local consumption, a small quantity is exported to the Presidency town for sale.

Oil-seeds.—Several kinds of oil-seeds are cultivated as field-culture ; others are the produce of trees planted out as topes ; to the former belong *gingely* seeds, *earth-nuts, lamp* and *castor oil seeds.*

All of these have their oils extracted to a small extent at Conjeveram, Wallajahbad, and other places. Most of the large villages manufacture it for local consumption. *As topes*, the *Elloopai*, *Pinnay*, *Vaypum*, and *Poongun*, are grown, and their oils extracted to a small extent, chiefly for local consumption. These oils are in great demand for the various Hindoo temples, where they are held in great estimation.

Fibres.—The only fibres cultivated for the purpose are the *Sun* or *Crotalaria Juncea* and *Poolachay* or *Hibiscus Cannabinus*, which are fibre-yielding plants. Others abound in the district in a wild, uncultivated state ; the variety is large, and the quality of some unexceptionable, and would prove extremely useful, not only for textile fabrics, but for all general purposes. The subject is greatly neglected—the natives being able to supply all their wants in this respect from the plants found growing wild. They are loath to enter into their cultivation as an article of commerce. Should greater attention be drawn to the subject, and a demand for them be created, a large amount of valuable fibre can be grown with advantage to the cultivator and merchant.

Medicinal Herbs.—A variety of medicinal plants are found growing in the district, among which the following may be enumerated; Senna, Indian Sarsaparilla, Chiretta, Stramonium, Colocynth, Indian Squill, Bael, Cassia fistula, Nux Vomica, Hydrocotyle, &c. *Medicinal* and other *gums* are also found in the district to a small extent, which are chiefly expended in local consumption.

Dyes.—Indigo of a superior kind is exported to a considerable extent. The plant is cultivated over most parts of the district, and the natives manufacture the dye largely for export. Some of the European houses of Agency at Madras have manufactories in the district, where Indigo of a superior description is manufactured.

Other dyes, such as the *Chay* root, *Nona*-root-bark, Cashew leaves, Jabrah seeds, Henna, &c., are largely brought into play as such, by weavers, dyers, and others.

Tanning substances.—*Cassia Auriculata* or *Avarum puttay*, Mango bark, Babool bark, Pomegranate rind, *Nelliekoy*, Mundara bark (tree), &c., are found in the district, and used as tanning substances by the natives.

Cotton.—This cultivation has been introduced into the district during the last three years since the origin of the American war, and the culture is being slowly and surely extended.

Sugar.—A small quantity of sugar-cane is grown, but it is chiefly consumed in the raw state, sugar being seldom or ever manufactured from it directly; but the sap of the palmyra, cocoanut, and date trees, is evaporated into *jaggery;* the palmyra supplying the largest amount of jaggery or raw sugar.

In addition to what has been enumerated, a large number of other vegetable substances are grown in the district, chiefly for local consumption, and occasionally for export.

NATURAL HISTORY.

It is impossible to give in these pages a full description of the Fauna and Flora of this district, in which I have resided for the last six years. I had made large collections, some of which I distributed among some of the museums in England, and others to friends: and I find now that I have lost many of my notes, and am therefore unable to give a full catalogue of the collections made in the various departments of natural history, and just now being pressed for time, I merely give in the following pages a list of animals and plants which I have found and personally recognized in the district.

Geology.—Scattered over this district are various ranges of small mountains with detached hills and rocks of primitive origin, the greatest of which does not exceed five hundred feet in height: and huge masses of granite are met with, over-topping and underlying the surface; these seem to belong to three different periods. Granite in a state of decay and disintegration is met with in most parts of the district a few feet under ground, and a deeper stratum in all its integrity is frequently reached in sinking wells.

The face of the country is a flat level plain, occasionally breaking into a slight undulatory rise in some parts. In others, the soil is made up of red sand frequently giving cover to a bed of gravel occasionally mixed up with laterite: the gravel possesses excellent binding qualities, and is brought into play for road-making. The vicinity of Conjeveram yields some fine sand-stone, occasionally found irregularly variegated with brown, yellow, and lilac colors. In some parts of the district, recent tertiary and alluvial deposits are met with, and, as elsewhere stated, rich magnetic oxides of iron, and materials for pottery and glass are found to exist, as also various other colored earths, and *Kunker* or small nodular lime-stone.

Fossils of wood and shells of various kinds have been found in the vicinity of Streepermadur. I have only seen specimens of the petrified wood.

ZOOLOGY.—DOMESTIC ANIMALS.

1. *Equidæ.* The *Equus Caballus*, or Horse.—Horses are not bred in the district, but the common country ponies are occasionally met with. They are wretched specimens as a body, but occasionally a decent animal is met with. The average price of a common *tat* is from Rs. 10 to 15. Animals of a superior description fetch larger prices.

2. *Asinus.*—The *Asinus Vulgaris*, or *Equus Asinus*, or domestic Ass, is reared to some extent in this district, chiefly by low-caste natives, who use it as a beast of burden; and the wandering classes of natives known as *Dombers*, and *Koravers*, &c. keep them in large numbers. In villages or towns, the washerman is the only individual who patronizes this animal. The ass is greatly despised by the natives, and no

disgrace is considered equal to that of seating an individual on this animal, and drumming him around the town. The milk of the she-ass, however, is considered by the natives as very nourishing to infants and invalids, and is preferred (when obtainable) to that of the cow or goat, for such children as are deprived of their natural sustenance.

3. *Bovidæ. Bos Indicus*, or common Ox.—The cattle of this district are of an inferior and small description, notwithstanding which, they carry out the work of the ryot in his agricultural operations pretty well, and are able to draw heavy cart-loads tolerably well on good roads. The cattle generally belong to the ryots,—there being no regular cattle-breeders; each individual possessing a few, which are huddled together with himself and family in his dwelling at night. No pasturage exists for cattle in the district: during the day they are let loose the first thing in the morning, and driven out to find what they can pick up in the open plains, and return at dusk when they receive a handful of straw; whilst others do not even get this, but subsist only on what they can get in the fields during the day. All the bulls are cut when they get six teeth, and till then they are allowed to run loose among the cows generally. No selection is made with a view to improve the breed; all that they care for, and feel anxious about is, to have a calf at the usual time, and however wretched it may prove, it does not matter to them. The cows, from their diminutive size and the bad feeding they get, are bad milkers; a few do yield from one to two quarts a day, when they receive a feed of some kind of grain, oil-cake or *tour*. The value of a good working bullock is from Rupees 17½ to 25, and that of a cow of the district from Rupees 15 to 20.

Diseases, Epizootic.—Aphtha, murrain, diarrhœa, and, it is generally believed, at times, small-pox, are the chief prevalent diseases. Cattle rapidly fall victims to murrain when it prevails, from being ill-fed and uncared for. And from the diseased animals being allowed generally to mix with the healthy ones, the disease, which is acknowledged to be, and is, infectious, becomes rapidly propagated.

There are no particular remedies in use. Occasionally some unmeaning ceremonies are practised by the natives, and the vine of the country liquorice is tied round the animal's neck. For epizootic aphtha, when the foot becomes sore, the cattle are made to stand in mud and water for several hours in the day. And for the murrain as well as all other diseases to which cattle are subject, the hot iron is the panacea. With this potential remedy, they frequently torture the unfortunate beast, from the wholesale manner in which it is applied.

4. *Buffaloes. Bubalus Buffelus.*—A large number of these animals are reared in the district, but they are generally of an inferior description and small size. Sometimes good milkers are met with, but those belonging to the district seldom yield two quarts a day when well-fed and taken care of. Sometimes, but not to any extent, they are used as plough and cart-oxen. The value of a working male is from Rupees 10 to 15, and that of a female from Rupees 15 to 20.

5. *Ovis aries*, or the Common Madras *Sheep* is found in the district and propagated to some extent; as they increase in numbers, they are exported for sale to the principal towns. These animals, although they thrive well here, suffer frequently from the N. E. winds during the monsoons, when large numbers are killed from the cold. Occasionally the *sheep-rot* makes its appearance among the flocks, and destroys a large number. For an account of the disease by the writer, vide Proceedings of Government, dated 13th July 1864, Revenue Department. The full grown (1st sort) sheep is to be had at from Rupees 1 to 3 each.

6. *Capreæ* or Goats.—The long-legged and short-legged or hairy goat are reared to some extent in the district, and among these some good milch-goats are met with. Each yields from one to two pints of milk daily when fed with grain. The price of a first sort he-goat is from Rupees 1 to 2, and that of a milch-goat from Rupees 5 to 7.

The flesh of the long-legged variety is the only kind of meat allowed to their patients by the Vythians, in some diseases.

Domestic Poultry.—The *Gallus Domesticus,* or Common fowl; *Meleagris Gallipano,* or Turkey; *Numida Meleagris,* or Guinea-fowl; *Columba domestica,* or Pigeon; *Anas Boschas,* or Duck; *Anas Moschatus,* or Manilla duck; *Anser domesticus,* or Goose, are all propagated and exported largely for sale to the principal towns in the district. As a rule, when the necessary care is bestowed on them, they thrive well, and the natives are very successful in rearing large numbers.

WILD ANIMALS.

Quadrumana.—Of this order, the *Hoonuman* or *Presbytes Entellus* is occasionally met with, and the common *Macaque* or *Macacus Cynomologus* are very numerous about native towns, from being held in veneration by the natives, but they are considered great nuisances in the neighbourhood.

Carnivora. Felidæ.—The *Felis Leopardus* has been shot on two or three occasions, but they are not found located in the district. On the occasions alluded to, they were stray animals, and when such is the case and the natives are able to trace their whereabouts, they take measures for their destruction, and generally with success. I have seen but two that were shot in the district. The *Felis Catus*, or Jungle Cat is also met with: and the Hyena or *Hyæna Vulgaris* or *H. Striata* is common.

Canidæ.—Of this order, independent of the Village Dog or the *Canis familiaris*, the *Canis Vulpes* or Fox, and the *Canis Aureus*, or Jackal, are plentiful, more especially the last-named animal, which proves a great nuisance in the district.

Cheiroptera.—Of this order, the Flying-fox or *Pteropus Edulis* and the *Pteropus Leschenaultii*, which is a small frugivorous Bat, and two kinds of the long-eared Bats, the *Plecotus Auritus*, and a species of the *Megaderma Lyra* are plentiful.

Viverridæ.—Of this family, the *Herpestes Griseus* or Mongoose, and *Paradoxurus typus* (Viverra nigra) or Wood-dog, and the *Viverra Civetta*, are plentiful.

ORNITHOLOGY.

1. Ord. *Raptores.*—Of this order, the *Otogyps Calvus*, or Black Vulture; *Cathartes Aura*, or Turkey Buzzard, or American or Carrion Vulture; the *Cathartes Papa*, or King of the Vultures; *Falco Peregrinus*, or "*Bhyri*;" *Falc Peregrinator*, or "*Shalim*;" *Accipiter Besra*, or "*Besra*;" *Hypotriorchis Chicquera*, or "*Tirumti*;" *Aquila Pennata*, or Dwarf Eagle; *Nisœtus Bonelli*, or "*Rajali*;" *Haliaster Indus*, or Brahminy Kite; *Milors Govinda*, or Pariah Kite; *Strix Candidus*, or Grass Owl; *Urra Bengalensis*, or Horned Owl—are found in various parts of the District.

2. Ord. *Insessores.*—*Hirundo Rustica*, or Common Swallow; *Cotyle Concolor*, a species of Martin; *Cypsœlas Botassiensis*, or *Palm Swift*; *Caprimulgus Asiaticus*, or Goat-

sucker; *Merops Viridis*, or Indian Bee-eater; *Coracias Indica*, or Common Jay; *Halcyon Leucocephalus*, or large King-fisher; *Alcedo Bengaliensis*, or small King-fisher; *Ceryle Rudis*, or large Black and White King-fisher; *Meniceros Bicornis*, or Grey Hornbill; *Palsorius Torquatis*, or Rose-ringed Parrakeet; *Chrysocolaptes Sultaneus*, or Royal Indian Woodpecker; *Endynamys Orientalis*, or Indian Cöil (pron. Queel); *Centropus Ruffiennis*, or Crow Pheasant, or Indian Concal; *Leptocoma Zeylanica*, or Honey sucker; *Arachnechthra lotenia*, or Purple Honeysucker; *Decæum Concolor*, or Flower Pecker; *Upupa Nigripennis*, or Hoopoe; *Lanius Loptora*, or Indian Grey Shrike; *Dicrurus Macrocercus*, or King Crow; *Tchitrea Paradisea*, or Indian Fly-catcher; *Dumetia Albogularis*, or White-throated Wren-babbler; *Pellorneum Ruficeps*, or Spotted Wren-babbler; *Malacocircus Griseus*, or White-headed Babbler; *Malacocircus Malabaricus*, or Jungle-babbler; *Ixos Luteolus*, or White-browed bush Bulbul; *Oetocompra Jocosa*, or Red-whiskered Bulbul; *Pycnonotus Hæmorhous*, or Common Bulbul; *Oriolus Kundoo*, or Mangoe Bird; *Thamnobia Fulicata*, or Indian Black Robin; *Sylvia Orphæa*, or large Black-capped Warbler; *Motacilla Madraspatana*, or Pied Wagtail; *Colobates Sulphurea*, or Grey and Yellow Wagtail; *Corvus Culminatus*, or Indian Corby; *Corvus Splendens*, or Common Crow; *Acridotheres Tristis*, or Common Myna; *Temenuchus Pagodarum*, or Brahminy, or black-headed Myna; *Pastor Roseus*, or Rose-colored Starling (cholum bird); *Ploceus Baya*, or Common Weaver-bird; *Estrella Amandava*, or Red Wax-bill; *Passer Indicus*, or House-sparrow; *Mirafra Affinis*, or Madras Bush Lark; *Spizalanda Deva*, or Small-crested Lark (chendul); *Alanda Gulgula*, or Indian Sky-lark (monaludi); *Galerida Cristata*, or Large-crested Lark (chendul).

3. Ord. *Gemitores.*—*Crocopus Cheerigaster*, or Green Pigeon of Southern India; *Columba Intermedia*, or Blue Rock Pigeon, (or C. livia); *Turtur Cambayensis*, or Little Brown Dove; *Turtur Suratensis*, or Spotted Dove; *Turtur Risoria*, or Common Ring Dove; *Turtur Humilis*, or Red Turtle Dove.

4. Ord. *Rasores.*—*Pterocles Fasciatus* or Painted Sand Grouse; *Pavocristatus*, or Pea-fowl; *Gallus Sonneratii*, or Grey Jungle-fowl; *Galloperdix Lunulosus*, or Painted Spur-fowl; *Ortygornis Ponticeriana*, or Grey Partridge; *Perdicula Cambayensis*, or Girza Quail; *Perdicula Asiatica*, or Lowa

Quail; *Coturnix Communis*, or large Grey Quail; *Coturnix Coromandelica*, or Common Batair Quail; *Turnix Taigoor*, or Gooldo, or black-breasted Bustard Quail.

5. Ord. *Grallatores.*—*Sypheotides Auritis*, or Lesser Floriken; *Cursorius Coromandelicus*, or Indian Courier Plover; *Squatarola Helvetica*, or Grey Plover; *Egialitis Pyrrhothorax*, or Lesser Sand Plover; *Sobivanellus Goensis*, or Red-wattled Lapwing; *Sarciophorus Bilobus*, or Yellow-wattled Lapwing; *Strepsilas Interpres*, or Turnstone; *Gallinago Scolopacinus*, or Common Snipe; *Gallinago Gallinula*, or Jack Snipe; *Rynchæa Bengalensis*, or Painted Snipe; *Actitis Glareola*, or Spotted Sandpiper; *Ciconia Alba*, or White Stork; *Ardea Cinerea*, or Grey Heron; *Ardea Purpurea*, or Purple Heron; *Herodias Alba*, or Large Egret; *Herodias Garzetta*, or Little Egret; *Ardeola Leucoptera*, or Pond Heron (Paddy-bird); *Nycticorax Griseus*, or Night Heron (wakka); *Anastomus Oscitans*, or Shell Ibis; *Theeskiornis Melanocephalus*, or White Ibis.

6. Ord. *Natatores.*—*Phœnecopterus Roseus*, or Flamingo; *NettapusCoromandelianus*, or White-bodied Goose-teal; *Dendrocygna Major*, or Whistling-teal; *Dafila Acuta*, or Pintail Duck; *Mareca Penelope*, or Widgeon; *Querquedula Crecca*, or Common Teal; *Querguedula Circia*, or Blue-winged Teal; *Graculus Carlo*, or Large Cormorant; *Graculus Sinensis*, or Lesser Cormorant; *Graculus Javanicus*, or Little Cormorant; *Plotus Melanogaster*, or Indian Snake-bird.

REPTILIA.

1. *Crocodilus Frontalus* (vulgaris) is found in the tanks.

2. *Chelonia.*—The *Testuda Radiata*, or small Land Turtle; *Tetraonyx Lessoni*, or Fresh-water Turtle, is found in the fresh-water tanks, brooks, and rivers.

3. *Ophidia.*—Of this order, the *Duboia Elegans*, or Russell's Viper; *Echis Carinata*, or Surata Pamboo of the Natives; *Python Molurus*, or Rock Snake; *Tropidonatus stolatus*, or Calliancooty (Tamil); *Passerita Mycterizansæ*, or Green Snake; *Bungarus cadidus*, or Yenna Vyrien (Tam.); *Naja Tripudians*, or Cobra; *Sycodon Aulicus*, or Carpet Snake; *Coluber Blumenbachii*, or Whip-Snake; *Dipsas Trigoriata*, or Peria Sudratay (Tam.), with several kinds of water-snakes, are met with.

4. *Batrachia.*—*Rana Tigrina*, or Bull-frog; *Rana culti-*

poru, or Green-frog; *Polypedates Leucomystox*, or Chunam-frog; and the *Bufo Scaber*, or Common Toad, are seen.

Geckos. Lacerta Gecko, or House-lizard; *Hemidactylus Coctei*, or Common House-lizard; *Enprepus Rufescens*, or Sound Lizard; *Colutes Versicolor*, or Blood-sucker; *Chamæleo Africanus*, or Chameleon, are plentiful.

PISCES.—1. FRESH-WATER.

Anabas Scandens,	or Panni Eyri	(Tamil.)
Ophicephalus Punctatus,	or Korave	do.
Ophicephalus Marginatus,	or Para Korave	do.
Ophicephalus Striatus,	or Varalu	do.
Rhyncobdella Aculeata,	or Aral	do.
Mastocemblus Marmoratus,	or Kul Aral	do.
Cyprinus Fimbriatus,	or Kainda	do.
Cyprinus Cirrhosis,	or Vailleechee	do.
Silurus Bimaculatus,	or Vallay	do.
Silurus Niger,	or Thaillee	do.
Eliotris Niger,	or Unnay Meen	do.
Gobius Setosus,	or Ooloove	do.
Bagrus Bilineatus,	or Tope Kelti	do.

2. SEA-FISH.

Lotes Nobilis,	or Kuduva	(Tamil.)
Ambassis Commersonii,	or Selintan	do.
Serranus Lanceolatus,	or Panni Min	do.
Mesoprion Annularis,	or Kuttu Purri	do.
Therapon Therops,	or Kuttu Kichan	do.
Sillago Acuta,	or Kelingan	do.
Otolithus Versicolor,	or Panna	do.
Pristipoma Caripa,	or Koori Min	do.
Scauber Karagurta,	or Kana Keleti	do.
Cybium Guttatim,	or Vanjara	do.
Cybium Interruptum,	or Velerhe	do.
Lactarius Delicatulus,	or Socdoombu	do.
Stromateus Candidus,	or Velle Vaval	do.
Stromateus Niger,	or Karoopoo Vaval	do.
Trichurus Naumela,	or Walé	do.
Trichurus Savola,	or Savale	do.
Mugil Cephlotus,	or Kola Kende	do.
Eugraulis Albus,	or Netteli	do.
Synaptura Commersonii,	or Erumeināk	do.
Scyllium Maculatum,	or Sorra Min	do.

INSECTA.

Ord. *Rynchota.*—The Homoptera, Membracina, and Heteroptera, of this order, are met with.

Ord. *Orthoptera.*—Members of this order are well represented in the various kinds of Grass-hoppers and Locusts.

Ord. *Neuroptera.*—Of this order, the *Termes fatalis* or White ant, is plentiful, and frequently proves a nuisance.

Ord. *Diptera.*—Of this order, the Muscidæ or Fly-family are well represented, and the mosquitoes often prove a great nuisance.

Ord. *Lepidoptera.*—This order is well represented, more especially by the Tineina, Totricina, Geometrina, Nocturna, and Catocolæ.

Ord. *Hymenoptera.*—Of this order, the Phyllophaga, or Saw flies, and the Xylophaga or Tailed Wasps, are representatives.

Ord. *Coleoptera.*—Of this order, the Tetramera, Pentamera, Hydradiphagæ, and others, are met with.

Insect life abounds in this district, and it would take more time than I can at present afford to give these in detail.

ANNELIDA.—The Leech is found in abundance in the tanks and shallow pools in this district, and any quantity can be readily got. I have submitted specimens of the Leech found in the district, to F. Moore, Esq., of the East Indian Museum.

CRUSTACEA.—Of this order, the Brachyuræ are met with: along the coast Sea Crabs are met with, and in the interior land and fresh-water Crabs abound in the paddy-fields.

MOLLUSCA.—The Ampullaria, Limnea, Helix Mylittis, Planorbis, Unio, and a great number of other mollusks are met with. The *Ostrea Edulis*, or edible Oyster is procurable in large numbers from the backwater at Covelong.

BOTANY.

Flora of the Madras District.

CLASS I.—DICOTYLEDONES.

Ranunculaceæ.......Naravella Zeylanica; common.
Dilleniaceæ..........Delinia Hebecarpa.
Anonaceæ.............Anona Squamosa; wild and cultivated.

Anona Reticulata; cultivated.
„ **Muricata;** do.
Artabotrys odoratissimus; cultivated.
Gnatteria longifolia.
Nymphæaceæ........**Nymphæa rubra.**
„ **alba.**
„ **edulis.**
„ **lotus.**
„ **odorata.**
„ **rosacea.**
Menispermaceæ.....**Cocculus cordifolius.**
„ **Indicus.**
Papaveraceæ........**Argimone Mexicana**
Cruciferæ............**Lepidium sativum; cultivated.**
Sinapis ramosa; do.
Capparidaceæ.......**Gynandropsis pentaphylla.**
Cleome monophylla.
Polanisia icosandra.
Cratæva Roxburghii.
Capparis horrida.
„ **brevispina.**
„ **divaricata.**
„ **grandis.**
Cadaba Indica.
Flacourtiaceæ........**Bixa Orellana; a few trees only met with.**
Violaceæ..............**Ionidium suffruticosum.**
Malvaceæ............**Malva Mauritiana.**
Hibiscus Surattensis.
„ **vesicarius.**
„ **rosa Sinensis.** } Cultivated.
„ **Cannabinus.**
„ **Sabdariffa.**
Abelmoschus esculentis.
Thespesia populnea.
Gossypium herbaceum.
„ **religiosum.** } Cultivated.
„ **Barbadense.**
„ **acuminatum.**
Abutilon tomentosum.
„ **Indicum.**
Sida acuta.
„ **retusa.**
„ **rhomboidea.**

Sterculiaceæ	Adansonia digitata; rare.
	Bombax Malabaricum.
	Eriodendron aufructicosum.
	Sterculia fætida.
	Ixora Coccinea; in gardens only.
Byttnereæ	Guazoma tomentosa.
Terustramiaceæ	Cochlospermum Gossypium.
Aurantiaceæ	Atalantia monophylla.
	Bergera Kœnigii.
	Feronia elephantum.
	Œgle marmelos.
	Citrus decumana; in gardens only.
	„ aurantium; do.
	„ bergamia; do.
	„ limonum; do.
	„ medica; do.
	Limonia acidissima; do.
Guttiferæ	Calophyllum Inophyllum.
Sapindaceæ	Cardiospermum helicacabrum.
	Sapindus emarginatus.
Meliaceæ	Melia azedarach.
	Azadirachta Indica.
Vitaceæ	Vitis quadrangularis.
	„ vinifera; in gardens only.
Oxalidaceæ	Averrhoa Carrambola. } In gardens only.
	„ bilimbi. } In gardens only.
	Oxalis corniculata; cultivated.
Zygophyllaceæ	Tribulus languinosus.
Rutaceæ	Ruta graneoleus; cultivated.
Rhamnaceæ	Zizyphus jujuba.
	„ scandens.
Anacardiaceæ	Anacardium occidentale.
	Semicarpus anacardium.
	Mangifera Indica.
	Odina wodier.
	Spondias mangifera.
Leguminosæ	Crotolaria juncea; cultivated.
	„ verrucosa.
	„ trifoliastrum.
	„ quinquefolia.
	Rothia trifoliata.
	Trigonella fænum græcum; cultivated.
	Cyamopsis psoraloides; do.
	Indigofera tinctoria; do.

Indigofera aspalathoides ; cultivated.
„ enneaphylla.
„ trita.
Clitoria ternata.
„ albiflora.
Agati grandiflorum.
„ albiflorum. In gardens only.
„ coccineum.
Aschynomene aspera.
„ Indica.
Zornia augustifolia.
Vicia faba ; cultivated.
Guilandina bonduc.
Sesbania Ægyptiaca.
Pisum sativum ; cultivated.
Abrus precatorius.
Phaseolus vulgaris ; cultivated.
„ mungo ; do.
„ trilobus ; do.
Dolichos uniflorus ; do.
Lablab vulgare ; do.
Mucuna pruritus.
„ monosperma.
Cajanus Indicus ; cultivated.
Erythina Indica.
Cannabalia gladiata.
„ virosa.
Butea frondosa.
Pongamia glabra.
Arachis hypogea ; cultivated.
Poinciana pulcherrima.
„ concolor.
„ elata.
„ regia.
Parkinsonia aculeata.
Tamarindus Indicus.
Cathartocarpus fistula.
„ Roxburghii ; in gardens only.
Cassia alata.
„ glauca.
„ auriculata.
„ tora.
Bauhinia purpurea.

	Pterocarpus marsupium.
	Bauhinia candida.
	„ tomentosa.
	Mimosa Indica.
	Inga dulcis.
	Adenanthera pavonia.
	Acacia Arabica.
	„ leucophlea.
	„ rugata.
	Wrightia tinctoria.
	„ antidysenteria.
	Prosopis Spicigera.
	Acacia sundra.
	„ speciosa.
	„ sirissa.
Moringaceæ.........	Moringa pterygosperma.
Rosaceæ..............	Rosa Indica; in gardens only.
	„ Edwardsii; do.
Lythraceæ...........	Lawsonia alba.
	Lagerstræmia Indica.
	„ Reginæ.
Combretaceæ........	Terminalia Catappa.
	„ belerica.
	„ tomentosa.
	Quisqualis Indica.
Myrtaceæ............	Punica granatum; in gardens only.
	Psidium pomiferum.
	„ pyriferum.
	Myrtus communis; in gardens only.
	Syzgium Jambolanum.
	Jambosa vulgaris; in gardens only.
Barringtoniaceæ...	Barringtonia speciosa.
Cucurbitaceæ........	Langenaria Vulgaris; cultivated.
	Cucumis Melo; do.
	„ Sativas; do.
	„ Colocynthis
	Bryonia Scrabrella.
	„ Rostrata.
	„ Callosa.
	„ Epigæa.
	Coccinia Indica.
	Momordica Charantia
	„ Muricata; cultivated.
	Trichosanthes Anguina; do.

Trichosanthes Cucumerina; cultivated.
Cucurbita Maxima; do.
„ Citrullus
Papayaceæ..........Carica Papaya.
Portulaceæ..........Portulaca Oleracea; cultivated.
„ Quadrifida..
Trianthema Obcordata.
Crassulaceæ.. .... Bryophyllum Calycinum.
Cactaceæ.............Opuntia Dillenii.
„ Vulgaris.
„ Cochinellifera.
Umbelliferæ........Coriandrum Sativum; cultivated.
Hydrocotyle Asiatica.
Cinchonaceæ........Nanclea Parvifolia.
„ Cadamba
Stylocoryne Webera.
Morinda Citrifolia.
„ Tinctoria.
Guettarda Speciosa.
Ixora Coccinea.
„ Parviflora.
Pavetta Indica.
Hydrophylax Maritima.
Hamelia Patens. In gardens only.
Compositæ...........Grangea Madraspatana.
Helianthus Annuus.
Tagetes Patula.
„ Erecta.
Chrysanthemum Indicum.
Artemisia Indica.
Senecio Vulgaris.
Eclipta Prostrata.
Sapotaceæ.............Mimusops Eleugi.
Bassia Longifolia.
„ Latifolia.
Jasminaceæ..........Jasminum Sambac. In gardens only.
„ Angustifolium; do.
„ Grandiflorum; do.
Nyctanthes Arbor Tristis; do.
Asclepiadaceæ.......Cryptostegia Grandiflora.
Calatropis Gigantea.
„ Hamiltonii.
Hemedismus Indicus.
Demia Extensa.

	Pergularia Odoratissima.	
	Allamanda Cathartica.	
	Carissa Carandas.	
	Thevetia Nerifolia.	In gardens only.
	Taberuœmontana Coronaria;	do.
	Vinca Rosea;	do.
	„ Albiflora;	do.
	Plumeria Acuminata;	do.
	„ Alba;	do.
	Nerium Odorum	
	„ Albo-simplex.	
	„ Plenum.	
Loganiaceæ	Strychnos Nux Vomica.	
	„ Potatorum.	
Gentianaceæ	Villarsia Cristata.	
Bignoniaceæ	Bignonia Suberosa.	
	Calosanthes Indica.	
	Tecoma Staus.	In gardens only.
Pedaliaceæ	Pedalium Murex.	
	Sesamum Indicum;	cultivated.
	„ Prostratum.	
	Martynia Diandra.	
Convolvolaceæ	Evolvulus Alsinoides.	
	Hewittia Bicolor.	
	Ipomœa Reptaus.	
	Pes Capræ.	
	Ipomœa Gemella.	
	„ Turpethum.	
	„ Pes-tigridis.	
	Batatus edulis;	cultivated.
	Pharbitis nil.	
	Argyreia speciosa.	
Cuscutaceæ	Cuscuta reflexa.	
Cordiaceæ	Cordia myxa.	
	„ augustifolia.	
Boraginaceæ	Trichodesma Indica.	
Ehretiaceæ	Ehretia aspera.	
	„ buxifolia.	
	Tiardium Indicum.	
Solanaceæ	Physalis Peruviana.	
	„ flexuosa.	
	Capsicum annuum;	cultivated.
	„ frutescens;	do.
	„ fastigiatum.	

Solanum Melongena; cultivated.
„ incertum; not do.
„ torvum; do. do.
„ trilobatum; do. do.
„ Jacquini; do. do.
Lycopersicon esculentum.
Atropaceæ..........Nicotiana tabacum; cultivated.
Datura alba.
„ fatuosa.
Scrophulariaceæ....Semnophila gratioloides.
Torena Asiatica.
Vandellia Roxburghii.
Labiatæ..............Œcimum canum.
„ basilicum.
„ thyrsiflorum.
„ sanctum.
Salvia officinalis; cultivated.
Anisomeles ovata.
„ Malabarica.
Lencos aspera.
„ Cephalites.
Verbenaceæ.........Zapania nodiflora.
Lantana Indica.
Duranta Ellisia; in gardens.
Tectona grandis; a few trees only.
Premna integrifolia.
„ latifolia
Gmelina arborea.
„ Asiatica.
Vitex trifolia.
„ negundo.
Acanthaceæ..........Asystasia Coromandelina.
Barleria prionitis.
Graptophyllum hortense; in gardens only
Adhatoda vasica.
Gendarussa vulgaris.
„ Tranquebarensis.
Rhinacanthus communis.
Andrographis paniculata.
Asteracantha longifolia.
Plumbaginaceæ....Plumbago Zeylanica.
„ rosea.
Nyctaginaceæ.......Boerhaavia procumbens.
„ repanda.

Mirabilis Jalapa.
Pisonia morindifolia; in gardens only.
Amaranthaceæ......Celosia argentea.
„ cristata.
Amaranthus polygamus; cultivated.
„ ruber; do.
„ oleraceus; do.
„ olus; do.
„ spinosus.
„ tristis.
„ campestris.
Erna lanata.
„ sessile.
Achyranthus aspera.
Gomphrena globosa (ruber.)
„ „ (alba.)
Alternanthera sessilis.
Chenopodiaceæ......Spinacia oleracea; cultivated.
Bassella alba.
Phytolaccaceæ......Giesekia pharnacioides.
Polygonaceæ.........Rumex vesicarius; cultivated.
Aristolochiaceæ....Aristolochia bracteata.
„ Indica.
Euphorbiaceæ......Euphorbia nivulia.
„ pilulifera.
„ antiquorum.
„ tortilis.
„ tirucalli.
Acalypha Indica.
„ betulina.
Jatropha multifida; in gardens only.
„ curcas.
„ glandulifera.
Janipha manihot; in gardens only.
Ricinus communis; cultivated.
„ (fructus majoribus); do.
Phyllanthus Madraspatensis.
„ Niruri.
Emblica officinalis.
Cicca disticha; in gardens only.
Urticaceæ.........Cannabis Sativa; cultivated.
Arotcarpaceæ......Artocarpus integrifolia; in gardens only.
Morus Indicus.

Ficus Carica; in gardens only.
„ Indica.
„ religiosa.
„ nitida.
„ racemosa.
„ oppositifolia.
„ Tsiela.
„ Benjamina.
Itilaginaceæ.........Antidesma paniculata.
Piperaceæ..... ...Chavica betel; cultivated.
Casuarinaceæ......Casuarina muricata; do.
Cycadeaceæ.. ....Cycas circinalis.

CLASS II.—MONOCOTYLEDONES.

Endogenæ.

Dioscoreaceæ..... ...Dioscorea alata; cultivated chiefly.
„ purpurea; do.
„ oppositifolia; do.
Roxburghiaceæ.....Roxburghia glorosoides.
Hydrocharidaceæ...Vallisneria spiralis.
„ alternifolia.
Zingiberaceæ........Zingiber officinalis; cultivated chiefly.
Curcuma longa; do.
Hedychium coronarium.
Marantaceæ.........Maranta arundinacea; cultivated.
Canna Indica.
„ lutea.
Musaceæ............Musa paradisiaca; cultivated.
„ rubra; do.
Amaryllidaceæ.....Crinum Asiaticum.
„ difixum.
Agane Americana.
„ vivipara.
Fourcroya gigantea.
Bromeliaceæ.. ...Ananas sativus.
Liliaceæ............Gloriosa superba.
Sanseveira zelanica.
Alve Indica.
Yucca gloriosa; in gardens only.
Allium Cepa; cultivated.
„ sativum; do.
„ sarmentosus; do.
Palmaceæ...........Areca Catechu; in gardens only.
Calamus rotang.

	Borassus flabelliformis.	
	Phœnix farinifera.	
	„ sylvestris.	
	Cocos nucifera ; cultivated.	
Pandanaceæ........	Pandamus odoratissimus.	
Typhaceæ............	Typha elephantina.	
	,, angustifolia.	
Oraceæ...............	Amorphophallus campanulatus.	
	Colocasia antiquorum.	
	Dracontium polyphyllum.	
Pistiaceæ............	Lemua globosa.	
	Pistia stratiotis.	
Graminaceæ......	Oryza Sativa ;	cultivated.
	Zea Mays ;	do.
	Panicum miliaceum ;	do.
	„ miliare ;	do.
	„ pimentosa ;	do.
	„ Italicum ;	do.
	,, frumentaceum ;	do.
	Pencillaria spicata ;	do.
	Spinex Squarrosus ;	do.
	Cynodon dactylon ;	do.
	Elensine Coracana ;	not do.
	,, stricta ;	„ do.
	,, Ægyptica ;	,, do.
	Poa annua ;	„ do.
	Testuca Indica.	
	Bambusa arundinacea.	
	Saccharum spontaneum ;	cultivated.
	„ officinarum ;	do.
	Shorgum vulgare ;	do.
	„ saccharatum ;	do.
	Andropogon muricatus.	
	„ citratus.	

CLASS III.—ACOTYLEDONES.

Thallogenæ.

Filices...............	Hemonitis cordata.
	Polypodium quercifolium.
	Zygodium microphyllum.
Lycopodiaceæ.......	Lycopodium cernum.

The above does not include the *entire* flora of the District.

Statement shewing the period the several descriptions of grains, &c., are sown and cropped in the District of Chingleput.

Description of Land.	Description of Grain.	Total period of the process of Sowing.	Total period of process of Cropping.	No. of months crop remains in the Ground.	Period of Sowing.	Period of Cropping.
	Sumbah or White Rice.	Months.	Months.			
Nunjah.	1. Codum Sumbah	1	1	6	12th March to 30th April...	15th August to 14th Sept.
	2. Seeraga Sumbah	1	1	7	13th June to 12th July......	14th Dec. to 12th January.
	3. Peroom Sumbah.........	1½	1	7	15th July to 29th August..	13th Jan. to 11th February
	4. Vadam Sumbah	1	1	6	15th July to 13th August..	14th Dec. to 12th January.
	5. Neeravully Sumbah.....	1½	1	8	15th July to 29th July......	11th Feb. to 11th March.
	6. Chinna Sumbah.........	1	1	7	15th July to 13th August...	13th Jan. to 11th February
	7. Cadoicullatham..........	1	1	8	do. do.	11th Feb. to 11th March.
	8. Sagappoo Mologoo......	1	1	7	do. do.	13th Jan. to 11th February.
	9. Thoayamully.. ...	1	1	8	do. do.	11th Feb. to 11th March
	10. Sooramany Sumbah....	1½	1	7	15th July to 29th August..	13th Jan. to 11th February.
	11. Kuckyla Sumbah.......	1	1	7	15th July to 13th August..	do. do.
	12. Polun Sumbah...........	1½	1	7	15th July to 29th August..	do. do.
	13. Soogadoss....	1	1	5	15th August to 13th Sept..	14th Dec. to 12th January.
	14. Vellaymolagoo Sumbah	1	1	4	15th Sept. to 14th October.	do do.
	15. Puttaray Sumbah.......	1	1	7	15th July to 13th August..	13th Jan. to 11th February.
	16. Manavaray Sumbah.....	1	1	5	14th Dec. to 12th January.	12th April to 11th May.

Statement shewing the period the several descriptions of grains, &c., are sown and cropped in the District of Chingleput.

Description of Land.	Description of Fruits.	Total period of the process of Sowing.	Total period of process of Cropping.	No. of months crop remains in the Ground.	Period of Sowing.	Period of Cropping.
Poonjuh or Dry Ground.	*Dry Grains.*	Months.	Months.			
	1. Munja Calvargoo … …	1	1	4	13th May to 11th June……	15th Aug. to 13th Sept.
	2. Carimchooruttay … …	1	1	5	do. do. 13th Jany. to 11th Feby.	15th Sept to 14th Oct. 12th April to 11th May.
	3. Vellasooruttay… … …	1	1	5	13th May to 11th June……	15th Sept. to 14th Oct.
	4. Cooroovaragoo … … …	1	1	5	do. do.	do. do.
	5. Cholum… … … ……	1	1	5	do. do.	do. do.
	6. Cumboo… …… …… …	2	2	6	13th May to 12th July……	do. 14th Nov.
	7. Colevaragoo………… ..	1	1	5	15th July to 24th August .	15th Nov. to 14th Dec.
	8. Tholayvirichangavoroo.	1½	1½	5	15th July to 29th August…	30th Oct. to do.
	9. Peroomvaragoo… … …	1	2	7	15th July to 24th August…	13th Jany. to 11th March.
	10. Yelemvarangoo…………	1	1 & 10 days	5	15th Aug. to 13th Sept……	14th Dec. to 22nd Jany.
	11. Sagappoocholum…… ..	1	1½	5	15th Sept. to 14th Oct……	28th Dec. to 11th Feby.
	12. Maduckoocholum … …	1	1	5	15th Nov. to 14th Dec…….	12th March to 10th April.
	13. Munjacholum…… ……	1	1	5	14th Dec. to 12th Jany……	12th April to 11th May.
	14. Cumbunchamay………	1	1	3	15th July to 13th August…	15th Sept to 14th Oct.
	15. Carinchamay … ………	1	1	4	15th Aug. to 13th Sept……	15th Nov. to 14th Dec.
	16. Thanay………………	1	1	3	15th July to 13th August…	15th Sept. to 25th Oct.
	17. Muccasolum… … … …	1	1	4	13th May to 11th June… 15th July to 13th Aug…. 13th Jany. to 11th Feby..	15th Aug. to 11th Sept. 15th Sept. to 14th Oct. 12th April to 11th May.

	Pulse.					
Poonjah or Dry Ground.	18. Coorolloo	1	1	4	13th May to 11th June	15th August to 13th Sept.
	19. Parelloo	1	1	4	15th Sept. to 14th October.	14th Dec. to 12th Jany.
	20. Toverye	1	1	7	15th July to 13th August.	13th Jany. to 11th Feb.
	21. Motchey	1	1	7	Do. Do.	Do. do.
	22. Green Gram 23. Black Gram 24. Horse Gram	1½	1	5	15th Sept. to 30th October.	Do. do.
	25. Bengal Gram 26. Cooloo Caramany	1½	1	4	15th Nov. to 28th Dec.	11th Feb. to 11th March.
	Garden Produce.					
Nunja Thottakal or Garden Land.	1. Chillies	2	2	5	12th Nov. to 12th January.	11th Feb. to 11th April.
	2. Tobacco	1	1	6	14th Dec. to 12th January.	13th May to 11th June.
	3. Senumboo	1	1	4	Do. Do.	12th March to 11th April.
	4. Green Ginger	1	1	6	13th March to 11th June, & 15th Sept. to 14th Oct	16th Oct. to 4th Nov., & 11th Feby. to 11th March.
	5. Brinjal	1	1	3	13th May to 11th June, 15th Nov. to 14th Dec., & 13th January to 11th Feb	15th July to 13th Aug., 13th Jany. to 11th Feb., & 12th March to 10th April.
	6. Benday	1	3	6	11th Feb. to 11th March, and 12th March to 11th April	13th May to 13th August, & 13th June to 13th Sept.
	7. Morry Paval	2	2½	5	11th Feby. to 10th April	13th May to 29th July.
	8. Cootchipaval	2	2	6	13th June to 10th August.	15th Sept. to 14th Dec.
	9. Podalam	2	2	6	Do. do.	Do. do.
	10. Pooseny	2	2	8	Do. do.	14th Dec. to 11th Feb.
	11. Colyana Pooseny	2	2	8	Do. do.	Do. do.
	12. Averay	1	4	8	15th July to 30th August	15th Nov. to 11th March.
	13. Peerkey	1	2	4	Do. do.	15th Sept. to 14th Nov.
	14. Soray	1	2	4	Do. do.	Do. do.

Statement shewing the period the several descriptions of grains, &c., are sown and cropped in the District of Chingleput.

Description of Land.	Description of Garden Produce.	Total period of the process of Sowing.	Total period of process of Cropping.	No. of months crop remains in the Ground.	Period of Sowing.	Period of Cropping.
		Months.	Months.			
Nunjah Thottakal, or Garden Land.	15. Coda Pooseny............	1½	2	6	11th February to 26th Mar.	13th June to 13th August.
	16. Vellary....................	3	3	3	11th February to 12th May	12th April to 30th August.
	17. Pootchecca Malura......	1	1	4	13th May to 11th June, & 11th Feby. to 11th March	15th Aug. to 13th Sept. & 13th June to 12th July.
	18. Mooloo Vellery..........	1	1	4	11th Feby. to 11th March...	13th June to 12th July.
	19. Moolangy..................	1	1	2	15th Nov. to 14th Dec., & 13th May to 11th June.	13th Jany. to 11th Feb. & 15th July to 13th Aug.
	20. Cothooaray...............	1	3	5	13th January to 11th Feby. & 13th May to 11th June.	12th March to 11th June, & 15th July to 14th Oct.
	21 Keeraythundoo, and Arakeeray..............	1 1	8	9	13th January to 11th Feby.	11th Feb. to 14th October.
	22. Benday..................	1				
	Rustoly..................	1				
	Beng l..................	1				
	Red Plantain.........	1	3	12	13th January to 11th Feby	14th Decr. to 11th Feb.
	Pay Vaulay............	1			15th July to 13th August.	13th May to 11th June.
	Cottay Vaulay.........	1			15th Sept. to 11th October.	15th July to 14th October.
	Caree Vaulay..........	1				
	Putchay Vaulay......	1				
	23. Salt.........	2	5	7	14th Dec. to 11th February	11th Feb. to 12th July.

Garden Land.	1. Sugar Cane	1½	2	12	11th July to 26th March	13th Jany. to 11th March.	These are also cultivated in Nunjah land.
	2. Curney	2	2	8	12th March to 11th May	16th Oct. to 14th December.	
	3. Saping	1½	2	8	12th March to 26th April	15th Sept. to 14th November.	
	4. Saffron	1	1	9	13th June to 12th July	27th Jan. to 25th February	
	5. Varoocadalay	1	1	6	15th August to 13th September.	13th Jan. to 11th February.	
	6. Onions	1	1	5	13th January to 11th February.	13th May to 13th June.	
	7. Vully Calungoo	1	1	5	13th May to 11th June, 15th August to 13th September, and 13th January to 11th February.	15th Sept. to 14th Oct., 14th Dec. to 12th Jan. & 12th April to 11th May	These are also cultivated in Poonjah land.
	8. Indigo	1 2	1	4	11th Feb. to 11th March & 15th Nov. to 12th Jan.	11th Feb. to 11th March, and 13th May to 11th June	
	9. Betel	1	3	4	13th Jan. to 11th February	The cropping commences in July and continues 3 years.	
Garden Cultivation.	1. Cocoanut	1	For ever.	100	15th July to 18th August, & 13th Jan. to 11th Feb.	Throughout the year.	
	2. Palmyra	12	9	100	Throughout the year.	14th Dec. to 13th Sept.	
	3. Eachum	12	2	50	Do.	13th Jan. to 11th March.	
	4. Nut-tree	12	For ever.	40	15th July to 13th August, & 13th January to 11th Feb.	Throughout the year.	

Statement shewing the period the several descriptions of grains, &c., are sown and cropped in the District of Chingleput.

Description of Land.	Description of Flowers.	Total period of the process of Sowing.	Total period of process of Cropping.	No. of months crop remains in the Ground	Period of Sowing.	Period of Cropping.
		Months.	Months.			
Garden Cultivation.	5. Mangoe	1	3	70	15th July to 13th August, & 13th Jan. to 13th Feb.	12th April to 12th July.
	6. Jack	1	3	50	Do. do.	Do. do.
	7. Orange	1	4	40	11th April to 11th May, & 13th January to 11th Feb.	18th January to 12th April, & 15th Aug. to 14th Dec.
	8. Lemon	1	12	20	12th January to 11th Feb.	Throughout the year.
	9. Pumplemoose	1	4	20	13th January to 11th Feb., & 15th July to 13th Aug	12th April to 13th August.
	10. Mannulla	1	4	20	13th May to 11th June, and 13th January to 11th Feb.	13th Jan. to 12th April, & 15th August to 14th Dec.
	11. Camala					
	12. Cholah Chuney					
	13. Bada Chuney					
	14. Narthum					
	15. Cody Madalum	1	3	10	Do.	13th Jan. to 10th April.
	16. Madalum		3	10		Do.
	17. Banthum		2	50		13th Jan. to 11th March.
	18. Moonthiry		3	30		12th April to 12th July
	19. Pomaugoy	1	3	30	Do.	15th Sept. to 14th Dec.

Garden Cultivation.	20. Dyeing roots..............	1	1	1	13th January to 11th Feb.	15th July to 13th August
	21. Cuscus........	1	1	12	15th July to 13th August.	13th June to 12th July
	22. Elendum..................	...	3	50	......	13th January to 10th April.
	23. Wood-apple................	...	2	50	......	15th Sept. to 14th Nov.
	24. Nagapullum............ ...	...	2	50	......	15th August to 14th Oct.
	25. Eloopa Maram............	......	2	80	....	13th June to 13th August.
	26. Seta Maram..............	......	2	15	....	Do. do.
	27. Goa........................	......	2	30	....	13th January to 11th March
	28. Fig........................	......	Ever.	70	....	Once in a month.
	29. Nelly........................	......	2	50	....	11th February to 10th April
	30. Mooroongay..............	......	......	15	....	Throughout the year.
	31. Margosa....................	......	2	100	....	15th Sept. to 14th Nov.
	32. Tamarind..................	......	2	150	....	13th Jan. to 11th March.
	33. Thamarthumcoy.........	......	2	50	....	15th Aug. to 14th Oct.
	34. Nonamaram..............	......	Ever.	30	....	The bark is cut throughout the year.
	35. Potapulum Vare	......	......	......	....	13th June to 13th August.
Flower.	1. Mulliga......................	1	1	20	13th Jan. to 11th Feb. and 15th July to 15th Aug.	12th April to 11th May.
	2. Moollay.....................	1	5	50	Do. do.	12th April to 13th Sept.
	3. Samunthy..................	1	3	1	15th July to 13th Aug. and 15th Aug. to 13th Sep.	15th Nov. to 11th Feb.
	4. Nayla Sumbunghy......	12	3	1	Throughout the year.	16th Oct. to 11th Feb.
	5. Thalampoo................	Ever.	12	Ever.	Spontaneous.	Throughout the year.
	6. Coday Sumpangy.......	12	3	10	Do.	12th April to 12th July.
	7. Castooriputtay..........	1	5	Ever.	15th July to 13th Aug. and 13th Jan. to 11th Feb.	12th April to 13th Sep.
	8. Jajee........................	1	3	5	Do. do.	12th April to 12th July.

Statement shewing the period the several descriptions of grains, &c., are sown and cropped in the District of Chinglepnt.

Description of Land.	Description of Flowers.	Total period of the process of Sowing.	Total period of process of Cropping.	No. of months crop remains in the Ground	Period of Sowing.	Period of Cropping.
Flower.	9. Thavanum… …………	1	4	5	15th Nov. to 14th Dec.	14th Dec. to 10th April.
	10. Thamaray…. ………	12	5	Ever.	Throughout the year.	Throughout the year.
	11. Rose …………………	12	5	do.	Do.	15th Nov. to 10th April.
	12. Moogoolum…… ………	1	5	20	13th Jan. to 11th Feb., and 15th July to 13th Aug.	16th Oct. to 11th Feb. 15th Nov. to 11th Feb.
	13. Parijathum… ………	1	3	10	Do. do.	
	4. Mummathubanum ….	1	12	10	Do. do.	Throughout the year.
	15. Monorunjithum…. ….	1	4	20	Do. do.	15th Sep. to 12th Jan.
	16. Cathoorooputchey… …	1	4	1	15th Nov. to 14th Dec.	14th Dec. to 10th April.
	17. Punneerooppoo………	1	Ever.	Ever.	13th Jan. to 11th Feb., and 15th July to 18th Aug.	Throughout the year.
	18. Nundiavattum………	12	do.	do.	Throughout the year.	Do.

ART. III.—*Lectures on Diseases of the Eye.* By GEORGE SMITH, M. D., Principal of the Madras Medical College, Professor of Ophthalmology, and Superintendent of the Eye Infirmary.

LECTURE I.

THE subject of "the Conjunctiva in Health and Disease, and under Injury," will occupy our attention in this and following lectures; but, before entering upon its consideration, I would offer a few remarks on the physiognomy of ocular disease, and on the exploration and medication of the eye.

With reference to the first of these points, I may observe that the experienced eye detects much of the character of a patient's disease from peculiarities in his bearing and expression, which, to the inexperienced eye seem to have little or no significance. That old man with the stoop of age, with corrugated and depressed eyebrows, peering in the direction where he supposes I am standing as if he could see me, is a case of nuclear cataract. That middle-aged man with upright figure, uncertain step, staring inharmonious eyes and vacant look is a case of amaurosis. That woman of fifty, the embodiment of mental and physical distress, to whom day and night are both alike, is a case of hopeless glaucoma. That poor woman with the ill-nourished child, want traced in every feature, with large black eyes and dilated pupils, is a case of functional amaurosis from starvation and overlactation. That little boy with blinking lids, frowning eyebrows, intolerance of light and unvascular conjunctiva, is probably a case of reflex irritation from vermination. That child with eyes closed spasmodically, with swollen abraded eyelids and watery discharge from eye and nose, is certainly a case of strumous ophthalmia; see how it buries its head in its mother's bosom, or presses its irritable eyes upon her shoulder. That middle-aged man with nuclear cataract in one eye, and an unnaturally clear black pupil in the other, led,—for he is blind—by the hand, is most probably an unsuccessful case of depression of the lens by a native operator. That patient with thick congested lids, bleared corneæ, intolerance of light and lacrymation is the subject of granular lid; and that other with redness of the sclerotic conjunctiva out of all proportion to the vascularity of the lids, is, either a malingerer, who has created an ophthalmia to escape work, or else the unfortunate subject of barbarous native treatment. Finally, that case with swollen, erysipelatous looking lids of one eye is the subject of acute inflammation of the lacrymal sac, for in the region of the tendo oculi there is a swelling, the locality of which indicates the nature of the disease.

On the mode of submitting the eye to exploration, I have one or two hints to give. Many eyes may be carefully and satisfactorily examined without touching them at all. Eyes suffering from various diseases of the cornea, iris, lens, &c.,—if the palpebral fissure be of normal size and the eye be tolerant of light—may be examined with little or no manual interference. In the case of children, and in those suffering from spasm of the lids and photophobia, any attempt to open the lids by force is sure to end in their still more spasmodic closure. "*Arte non Marte*" must be our motto, in the managment of many of the cases which come under our treatment. The external aspect of the organ of vision is patent to us, without manual interference; for example, we readily note the condition of the eyebrows, eyelids and cilia; the state of the palpebral margins, of the caruncle, semilunar fold and lacrymal sac; the prominence or subsidence of the globe; the derangement or otherwise of the axes of vision; the presence or absence of oscillation; the condition of the curve and transparency of the cornea; the presence or absence of circumcorneal vascularity, &c. I mention these points in order to impress upon you how unnecessary it is to have recourse, in every case, to manual interference, when called upon to examine the eyes of patients suffering from ocular disease. In many instances, however, interference is not only expedient, but necessary; still, even in these cases, let the interference be as gentle as possible. Put your forefinger lightly upon the skin of the lower lid near the palpebral margin, tell the patient to look up, gently pull down the lid, and in depressing evert it somewhat by pressing backwards, and the whole lining membrane of the lid, with the caruncle and semi-lunar plait, the retro-tarsal fold, and the lower part of the sclerotic conjunctiva will come into view. Again, with the edge of the thumb applied to the skin of the upper lid, direct your patient to look down, and the condition of the ciliary margins and of the upper half of the sclerotic conjunctiva becomes manifest. The abduction and adduction of the eye will bring more of the conjunctiva under observation. If you desire to see the lining membrane of the upper lid, gently lay hold of a few of the central cilia tell the patient to allow the lid to rest loose, raise it gently from the ball of the eye, place the blunt, unfeathered end of your pen—the last half inch of the convex surface—over the *upper* margin of the tarsal cartilage, tell the patient to look down, and by gently pressing with the pen, elevating, at the same time the margin of the lid, the little operation is completed, and the everted lid is before you. By pressing backwards the tarsal margin of the everted lid, the retro-tarsal fold will come prominently into view. Some lids are so lax that you may easily evert them with the thumb, fore and middle fingers of either hand; with the forefinger and thumb the cilia are seized, the lid is drawn from the eye and raised, whilst counter-pressure over the upper margin of the tarsal cartilage with the tip of the middle or ring finger of the same hand effects the eversion. When no cilia are present, the same object is accomplished by grasping the edge of the lid and everting it by the counter-pressure of the thumb and forefinger. Though simple operations, these manipulations require a little practice. In cases where the conjunctiva is much engorged, the upper lid spontaneously everts on elevating it by traction on the skin. Sometimes the eye closes spasmodically, retaining the lid everted; a little pressure with the brush or with the tip of the finger replaces the dislocated lid. Occasionally the eversion is but half replaced; if so, by depressing the lower lid and applying traction near the outer angle of the palpebral fissure, the lid falls readily into its natural position. I have mentioned a pen as being the means generally used in everting the upper lid; any thing of similar shape will do just as well, a probe for example, but the pen has the advantage of being less formidable looking than a probe or special instrument, and this is a point of some importance. In instances where the conjunctiva is chemosed and the cornea hidden from view, it will be necessary to raise the upper lid without everting it; this is best effected by an ocular speculum in handle, of size proportioned to the age of the patient. Before the eyes of a child can be satisfactorily examined, it is often necessary to swathe the little patient in a sheet, and lay it upon its back on a bench. The Surgeon, seated on a chair a little higher than the bench, and with an apron over his lap, seizes the head of the child, and fixes it between his knees. The assistant, with one hand keeps the body of the child steady, and with the other depresses the lower lid. The Surgeon with his finger or with the speculum in handle raises the upper lid, examines the eye, and applies the remedies required. This is the only safe and practicable way of dealing with the majority of children. The expedient frightens them a little perhaps, but it secures the complete examination of the eye, and the safe application of the requisite remedies. There are cases where, in order to the full and careful examination of the eye of a child, it may be necessary to administer chloroform. These, however, are but few in number.

The eye is best examined in a quiet light. If there be great glare or a strong reflection upon the cornea, the patient is inconvenienced, and the Surgeon's examination is unsatisfactory. Both in examining the eye and in operating upon it, the more subdued the light the better are minutiæ seen, and this remark is applicable to the Native no less than to the European eye. The Surgeon will be much assisted in his minuter examinations of the organ of the vision, by a double convex lens of 2½ or 3 inches focus. Considerable experience is required before a facility is gained of detecting minute shades of color, &c., especially in the eye of the native. If there be mucous or purulent discharges from the conjunctiva, it is well for the Surgeon to see the eye before these are washed away. I need not dwell at greater length upon the subject of exploration of the eye; additional details will be given, from time to time, in connection with the treatment of individual diseases.

Lastly, I would solicit your attention to a list I now lay before you* of the more important formulæ in use in the Eye Infirmary.

A few words of explanation, advice and caution, as regards the treatment of diseases of the eye, may not be out of place. The eye is a sensitive, delicate, and valuable organ. Treat it, therefore, gently. Take care you do not *overdo* your treatment; avoid violent and strong remedies; be patient; be hopeful. Meddlesome ophthalmic practice is bad. If you cannot alleviate, do not aggravate disease. Do nothing by haphazard. Keep the affected organ clean, moderately protected but not shut out from light, at perfect rest, and allow the access to it of fresh air. Study your patient's feelings as regards the temperature of lotions, &c. Avoid poultices, except in affections of the lids, and in each individual case ask yourself this question before initiating treatment,—is this disease a local one "pur et simple," or is it constitutional as well as local? A local disease is best treated by local remedies; a constitutional affection demands constitutional as well as local treatment. Other questions will occur to you, such as, what is the stage of the disease? Is the affection simple or complicated? Has treatment aggravated the symptoms? Are all the morbid appearances results of the *present* disease? What are the habits and constitution of the patient? What do the look, tongue(1) and pulse indicate? Should I support or depress the vital powers?

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* See Appendix at the end of Lecture II.

Treat not *names* but *things*. Remember that violent local action is quite compatible with an enfeebled general system. In your ophthalmic experience in India, for one patient whose system you will be called upon to depress, you will find nine whom you must support with good diet, tonics, and even with stimulants. In one word, let common sense supplement the principles of treatment detailed in lectures and in text books. See that you are treating the disease which is actually before you, and not the mere name of a disease.

Fomentations are valuable remedies, if used with discretion. The poppy-head fomentation has little to recommend it beyond the heat and moisture it supplies; the anodyne effect of the poppy must be very trifling. Opium or extract of Belladonna may be added, if deemed advisable. The other three formulæ(2) given contain Belladonna, and may be used, either as simple fomentations, or for the purpose of steaming the affected eye. In using them the patient should be directed to avoid inhaling the steam by nose or mouth. If steaming is to be used, the solution may be placed in a jug with a narrow mouth, round which should be tied a napkin or towel on which the orbit may rest, so that the eye may be exposed to the full action of the warm medicated vapour. The toxic action of Belladonna takes place rapidly if the steam be inhaled by the mouth or nose.

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(1). The tongue is no guide, if the patient be a native and chew betel.
(2). Vide Formulary.

Warmth with moisture is often applied to the eye by means of a compress. In this way the soothing effects of a fomentation are secured, whilst the tendency to congestion induced by a simple fomentation is partially avoided by the pressure of the pad. The exact therapeutic action of cold, heat, and pressure upon the circulation of the eye should be carefully observed, so that a proper selection of the application may be made according to the circumstances of the case.(1)

Cataplasms are rarely applied in diseases of the eyeball, if we except abscess; their application to ordinary ophthalmias is most pernicious. In inflammations and abscesses of the lids they prove useful. As a general rule, I seldom employ them. Ice and iced-water, which, *a priori,* would be thought to exercise great control over inflammations of the eye, are found, in practice, to fall short of our expectations. The patient generally complains of uneasiness and discomfort, and willingly exchanges them for cold water, or, for fomentations. Not long ago it was proposed to keep up the application of cold to an affected eye by *irrigation* with water, or by the application of moistened clay. The former suggestion is inconvenient and, practically, is of little value, and as for the latter, I have given it up after a fair trial. The weight of the clay is an objection. Perhaps the best way of applying cold and moisture continuously to the eye is by soaking a slice of stale bread (freed of crust) in cold water, placing it between folds of fine muslin, and laying the cold poultice in contact with the affected organ.

Eye Drops(2) are generally applied to the conjunctiva by means of a quill, or of a medium-sized camel's hair-brush. I prefer the latter mode except in the case of wine of opium, which is generally dropped into the eye from a quill. Glass rods with a spiral twist at one extremity are also sometimes used to drop solutions into the eye.

If brushes are used, they should be kept scrupulously clean, for it must never be forgotten that all mucous, muco-purulent and purulent discharges from the eye are contagious. The employment of a disinfectant solution, as Condy's or MacDougal's, for the purpose of purifying the brushes and of destroying the virus of contagion, is absolutely necessary. Brushes, which

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(1.) See an admirable paper in Vol. ii (page 126) of the Ophthalmic Review by Mr. Carter "on the local application of hot and cold compresses in ophthalmic diseases."

(2) The term Collyrium, being equally applicable to *eye-drops* and to *eye-waters* or lotions, is avoided to prevent mistake.

have been used in cases of purulent ophthalmia, in acute granular lid, and in gonorrhœal ophthalmia, should be destroyed on the termination of the treatment of the case in which they have been employed. In applying a brush filled with solution to the conjunctiva, care should be taken to apply it gently, not to sweep it roughly across the membrane. In some cases by gentle pressure of the point of the brush on the edge of the tarsus, the space between the lower lid and eyeball may be filled with the solution, and the eye bathed, as it were, in the medicated fluid.

As a rule I have found that the *acetates* agree better with the conjunctiva than the *sulphates*, hence I generally substitute for the sulphates of alum, copper, and zinc, the corresponding acetates. After applying solids, as caustic and blue stone, the part should be bathed with water to remove any fine particles of the salt which may be left behind. When applying the stronger solutions, such as the saturated solution of the sulphate of copper, the strong solution of lunar caustic, or the stronger forms of the solution of chloride of zinc, the brush should be passed lightly and briskly over the membrane, a little oil being subsequently placed on the conjunctiva to remove irritation. It is of great importance, in the treatment of conjunctival affections with eye drops, that care be taken that the remedies employed be as gentle in their character as can be devised. We more frequently *overdo* than *underdo* treatment. A delicate structure like the conjunctiva or cornea demands that its diseases be treated with care and gentleness. Lately, various remedial agents, such as Atropine, Calabar bean, Iodide of Potass, Morphia, Ergotine, Bromide of Potass and Bromide of Ammonium have been used in the form of gelatine discs, as suggested by Mr. E. Hart, or, as thin films of paper which have been steeped in solutions, as proposed by Mr. Streatfeild. These forms are handy and efficient.(1)

Eye-waters, or lotions, constitute the weaker forms of solutions entrusted to patients themselves. They may be of various strengths, according to the requirements of the case. The patient should be carefully instructed how to use them, and how often in the day to apply them. In using lotions, it is well to remember that occasional changes in their composition and temperature are beneficial, and, further, that their prolonged use is apt to keep up a chronic inflammation of the conjunctiva. In some cases lotions may be dispensed with, the dry, cold and moist, or warm and moist compress being substituted for them. *Dont keep the eye too wet!*

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(1) Mr. Laurence uses "atropine-points."

I need hardly take up your time with the mention of *liniments*, *ointments*, and *glycerinates* or *plasmata*, beyond remarking that I find the plasmata admirable substitutes, in India, for ointments. The pigments of Belladonna and of Iodine are in constant use in the Eye Infirmary. In applying the former, which is of the consistence of thick syrup or treacle, the patient closes his eye gently, and the pigment is freely applied over the closed lids and up to the margins of the orbit, or if need be, to the orbital margins, and over the temples. Care must be taken in applying the pigment of Iodine to the lids, so that none of it may run along the creases of the skin into the eye. Direct the patient to close his eyes gently, with your thumb place the skin of the upper lid on the stretch, and apply the pigment brush,—not too much loaded with pigment,—to the point most distant from the palpebral fissure; by gradually approaching the palpebral margin, as the supply of pigment decreases and the brush dries, you may paint the whole lid safely up to the margin, without running any risk of causing the severe pain which follows the contact of the fluid with the conjunctiva. The pigment has a moderate consistence given to it by the addition of gum mastick.

THE CONJUNCTIVA IN HEALTH AND DISEASE, AND UNDER INJURY.

The conjunctiva, so called from connecting the lids and globe, is the delicate semi-transparent mucous membrane of the eye. Its prolongations pass into the ducts and recesses of the lacrymal gland, into the Meibomian ducts and glands, into the follicles of the cilia, and into the derivative canals. The conjunctiva, you must remember, forms part of the great gastro-pulmonary mucous membranes, being continuous with them through the mucous membrane lining the derivative canals. It is also continuous, at the margins of the lids, with the cutaneous envelope of the body, through the intermediate muco-cutaneous tissue of the edges of the lids.

We must consequently expect that the conjunctiva will more or less distinctly sympathize with the various physiological and pathological conditions of the mucous lining and cutaneous envelope of the body.

The conjunctiva consists of four portions—the palpebral, retro-tarsal, sclerotic, and corneal.

The palpebral conjunctiva is closely adherent to the lids; it is thick, vascular and well supplied with nerves; it consists of layers of tesselated epithelial cells which are flat(1) and polygonal; these cells rest upon a layer of connective tissue,(2) indistinctly fibrillated, arranged in areolæ and containing a small quantity of yellow fibrous tissue. The palpebral conjunctiva presents numerous papillæ, simple, small and cylindrical, scattered somewhat irregularly over its surface, and are seen much magnified when the membrane is suffering from inflammatory action.

Van Roosbröeck and Bendz describe also a system of small saccular closed follicles which are limited to the palpebral portion of the conjunctiva. These closed follicles are of two kinds, the simple and agminate. The agminate are said to be pretty constantly present as a patch near the external canthus. These closed sacs are glandular, and are not to be confounded with the papillæ proper to the mucous membrane. Each closed sac contains cells, nuclear particles and fluid. They are situated in the vascular corium. Their existence in the healthy conjunctiva, I must tell you, has been denied, but the weight of evidence seems to be somewhat in favor of their presence among the normal constituents of the palpebral conjunctiva. They have been called *trachomatous* glands, and have been regarded as the pathological seat of the disease called Military or Vesicular Ophthalmia—a disease, the nature of which has been carefully investigated by the Belgian physicians.

The retro-tarsal conjunctiva is as vascular and sensitive as the palpebral portion of the membrane; it is, however, thicker and more loosely connected with the subjacent tissue, hence the more copious character of the effusions below it as the result of conjunctival inflammations. Its papillæ are larger in form, like the fungiform papillæ of the tongue, compound in structure, and arranged in lines somewhat curved and running parallel with the long axis of the lid. There is no proper basement membrane supporting the epithelium.(1)? In this portion of the conjunctiva are found a few compound acinose glands, the glands of Kraüse which open by small ducts on the free surface of the lids.(1)

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(1) Nonciliated (Kölliker). See a sketch of the anatomy of the mucous membrane of the lids, by Dr. Marston. Archives of Medicine, vol. iii.

(2) Dr. Marston (Op. Cit.) inclines to the opinion that there is no basement membrane.

The sclerotic conjunctiva, again, in passing over the front of the eyeball loses its papillary structure, becomes less dense and vascular, and is more moveable owing to the laxity of the subconjunctival tissue. It presents follicles in its structure, especially in the neighbourhood of the base of the cornea.(2) I may mention in passing, that these follicles constitute the pathological seat of the disease inaptly called pustular ophthalmia. The sclerotic conjunctiva is connected with the sclerotic by a layer of elastic submucous tissue.(3) In some cases this layer is scanty, and the conjunctiva is only moveable within narrow limits; in other cases the tissue is abundant and lax, and permits of free movement of the superjacent membrane. The occasional free movement of the ocular conjunctiva, as well as its frequent friability, should be borne in mind when we have to lay hold of the membrane with forceps.

The sclerotic conjunctiva is closely adherent to the margin of the cornea; this close union enables the oculist to steady the eyeball with the forceps when performing the operation of extraction. Passing over the convexity of the cornea, the conjunctiva loses all but its layers of epithelial cells. The deeper layers of cells being crowded together and arranged vertically, whilst the more superficial are flattened and overlap each other. It is a matter of doubt whether any basement membrane lies between these cells and the anterior elastic lamina. Bowman regards the latter structure as the basement membrane; Nunneley thinks that a separate basement membrane exists.(4) A basement membrane is certainly developed in some forms of disease, as in pterygium, in which case the hypertrophied conjunctiva, including cells, basement membrane, fibrous, nervous, and vascular tissues, can be dissected with facility from the anterior elastic lamina. In old age the conjunctiva at the margin of the cornea becomes hypertrophied, and in the native pigmented, and encroaches upon the cornea especially superiorly.

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(1) W. Kraüse has counted 42 of these glands in the upper lid, and only from 2 to 6 in the lower. (Kölliker).

(2) It has no papillæ or glands, (Kölliker). "The small flask-shaped open follicles" were discovered by Manz and Stromeyer.

(3) Containing more or less fat cells. See Pinguecula or Pterygium Pingue.

(4) Kölliker agrees with Nunneley.

At the inner canthus of the eye we observe the plica semilunaris and caruncula lacrymalis. The caruncle is a small red-looking papilla, consisting of a congeries of mucous glands formed by lacunæ in the membrane. A few fine hairs often project from the surface of the caruncle, which is not infrequently pigmented in the case of the native. The fold and caruncle are the typical vestiges of what, in some animals, constitutes the third lid and accompanying gland.

The conjunctiva of the sclerotic surface is very thin and transparent in infancy and childhood; few vessels are seen on its surface. In more advanced life the membrane becomes thicker, especially in the equator of the eye; vessels of some size frequently course over its surface, and deeply pigmented patches are seen in it in the native eye. In some cases the membrane becomes very tough, in others very friable. The sclerotic conjunctiva is reproduced after ablation, as seen in cases of pterygium, and after the operation of syndectomy.

It is well to be familiar with the normal appearance of the conjunctiva. The palpebral and retro-tarsal portions are reddish, the sclerotic white and glistening. Considerable redness of the sclerotic conjunctiva, however, may be present, without constituting disease. In the native, pigmented patches are common in various parts of the mucous membrane.

The conjunctiva is susceptible of external influences and impressions. It is sensitive to cold and heat, to moisture and dryness, to wind and to general atmospheric changes. This susceptibility is more distinctly seen in the young than in the old, in the female than in the male, in the delicate than in the strong, in the European than in the Native, and in the native of the better classes, than in the poorer ranks of life. Among the poorer natives the bluntness of sensibility of the conjunctiva is often very remarkable. In connection with the lids, the conjunctiva secures at once freedom of motion of the eye with defence against external injuries, whilst its easily excited secretion facilitates the removal, from the surface of the organ, of foreign bodies. The absorbing power of the conjunctiva is very considerable, as evinced by the rapid action of contagious virus, such as the gonorrhœal, and of such poisons as Atropine and Calabar Bean. As part of the secreting surface of the body, the conjunctiva takes its part in muco-cutaneous efforts at elimination, and placed as it is at the point where a mucous membrane joins the skin, it exhibits the pathological results of irritation applied to other and very distant parts of the great mucous surface.(1) Ophthalmiæ, the result of vermination, illustrate this fact.

The conjunctiva sympathizes with irritations of the several mucous membranes of the body, with the stomach in dyspepsia, with the intestinal canal in its many derangements, with the pulmonary and genito-urinary mucous membranes, with the general cuticular surface, with the liver, kidney, and uterus, and with the system, as a whole, when under the influence of such dyscrasias as struma, rheumatism and gout. Anatomically, physiologically and pathologically considered, there are many features which are common to skin and mucous membrane, and, placed as they are continuously as the envelope and lining of the human body, we must be prepared to find the conjunctiva sharing more or less in the various morbid states which affect the surface of the body, as well as in the pathological conditions of other mucous tracts. With the gastro-intestinal mucous membrane the conjunctiva has very close sympathies.

I have mentioned that the conjunctiva is sensitive to changes of season and of temperature. A glance at the Table already given for the years 1863-64-65,(2) which exhibits the arrangement, into groups, of 6,000 cases of ocular disease, and shews the admissions to hospital, &c., in connection with the several months of the year, will prove this in a practical manner. Out of 6,063 cases of ophthalmic disease, 3,494 depended upon simple or complicated affections of the conjunctiva. Of this number, 667 cases only occurred in the cold months of November, December, January and February; 902 in the hot months of March, April, May and June, and 1,925 in the warm and moist months of July, August, September and October. January and February are the most healthy, August and September the most unhealthy months of the year in Madras, as regards conjunctival diseases. *Dry cool air suits the mucous membrane best; dry and warm*

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(1) Irritation applied to any part of a mucous membrane is often expressed, pathologically where that membrane joins the skin.

(2) See 'Madras Quarterly Journal,' No. 18, page 282.

air is less beneficial; warm and moist air, on the other hand, induces a decided proclivity to conjunctival inflammations.(1)

LECTURE II.

Three forms of inflammation of the conjunctiva will successively engage our attention: 1st, Simple Conjunctivitis, which is an inflammation of the membrane without discharge, or with only a watery or mucinous one; 2ndly, Catarrhal Conjunctivitis, or inflammation of the conjunctiva attended with a mucous or puro-mucous secretion; and 3rdly, Purulent Conjunctivitis, or inflammation of the conjunctiva attended with a muco-purulent or purulent discharge.

It must be remembered that the conjunctiva in health secretes no visible mucus; *visible mucus is an indication of disease.* From the glandular structures there issues a very slight secretion, which, in excess, becomes more or less mucinous. As the terms mucous, muco-pus and pus will be in constant use in my lectures, I quote an extract from an American author, in which the characteristics of each of these secretions are clearly and satisfactorily indicated. "When the fluid (says Dr. Woodward) is tenacious, colorless, transparent or slightly opaque and whitish, with more or less abundant epithelial elements, and few or none of the so called mucous corpuscles, it is to be designated *mucus.* When yellowish or a greenish yellow, with little or no epithelium, and abundant corpuscles, but tenacious, tough, stringy, and but little miscible with water, it should be called *muco-pus.* When the abundant corpuscles float in an albuminous serum, and are readily miscible with water, the name should be *pus.*"

In many cases these different secretions from the inflamed membrane do not represent separate diseases, but merely degrees or stages of one and the same affection; the simple conjunctivitis with its dry conjunctival surface, or, with a surface secreting watery or mucinous discharge, passes on to conjunctivitis with mucous or puro-mucous discharge, which, again, more or less rapidly terminates in a conjunctivitis characterized by muco-purulent or purulent secretion.

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(1) These facts have a practical bearing on the treatment of conjunctival disease; cold and dryness are beneficial, as opposed to warmth and moisture.

SIMPLE CONJUNCTIVITIS.

Synonyms.—Simple ophthalmia. Conjunctivite simple or phlegmoneuse. Taraxis. Ophthalmia Angularis.

Although some writers on diseases of the eye decline to recognize simple conjunctivitis as a separate disease, classing it as a minor degree or incipient stage of catarrhal ophthalmia, which latter they regard as the proper type of conjunctival inflammation, yet I cannot but think that, practically, it is advisable to confine the term catarrhal to those inflammations of the conjunctiva which are characterized by a mucous or puro-mucous discharge, restricting the term *simple conjunctivitis* to those inflammations of the membrane, which are attended by a watery or mucinous secretion, and which are not dependent upon any skin eruption. Experience proves to us that there are inflammations of the conjunctiva, which, unless maltreated, have little or no tendency to assume the catarrhal form, and, therefore, whether we choose to regard these diseases as separate affections, or as the initial stages of catarrhal inflammation, it will be equally convenient to accord them separate consideration here. In dwelling for a little upon simple conjunctivitis, I shall take the liberty of extending somewhat the term, so as to embrace not only acute and subacute conjunctivitis, whether idiopathic or symptomatic, but also the principal forms of acute and subacute congestion of the membrane, provided they be unattended with a mucous or purulent discharge. Chronic ophthalmia will be considered separately.

From whatever cause arising, abnormal vascularity of the ocular conjunctiva has peculiar features which distinguish it from vascularity of the subconjunctival tissue and of the sclerotic. The conjunctival vessels lie superficially, are seated in a lax membrane and are moveable. Exposed freely to the air, they present a florid red color, and their arrangement is reticular, the meshes becoming smaller as they approach the base of the cornea, the largest vessels being at the point where the palpebral and sclerotic conjunctivæ join.(1) The subconjunctival vessels, which are intimately connected with the circulation of the Iris, are deeper, less numerous, less moveable, flattened looking, purple in color, and not reticulated. The sclerotic vessels when inflamed cannot be seen as vessels, the vascularity making itself known as a carmine wash round the base of the cornea, and manifestly on a deeper plane than the vascularity of the conjunctiva.

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(1) The diagram at page 18 of the text-book shows well the peculiarities of conjunctival, but indifferently the characteristics of sclerotic vascularity.

In simple conjunctivitis the peculiar type of conjunctival vascularity is well seen, often in defined patches, especially at first; in the more severe forms, the outlines of the vessels disappear in the general congestion of the membrane.

A, was seized with smart pain in one eye when proceeding by rail to Bangalore. The eye became much inflamed. Soothing remedies were applied. He returned to Madras and came under treatment. On everting the upper lid a small piece of ash from the Steam engine was removed. Vascularity of the eye great, but confined to the conjunctiva. Lacrymation considerable. Sluicing with cold water, rest to the eye, and a shade were recommended.

B, an artificer from the Gun Carriage Manufactory, presented himself complaining of pain in the eye, and a feeling as if sand had got into it. Vascularity, lacrymation, and considerable intolerance of light. On examining the eye with a three-inch convex lens, a very minute piece of steel was found entangled in the epithelial layer of the cornea. The speck was removed with Dixon's spud. Cold water bathing of the eye, and absence from work for one day were recommended.

C, a student of one of the Seminaries, preparing for his Matriculation Examination. Eye red and intolerant of light; complains of a burning and smarting sensation, especially in the evening. Sight somewhat less acute than before the attack. Sclerotic Conjunctiva congested; palpebral still more so; lids do not adhere during the night. Causes, over exertion of the eyes, the use of a bright reading lamp, and impairment of general health. Directed to give up reading by artificial light, to bathe his eyes frequently with cold water, to use a weak solution of alum in rose water (gr. 2 ad ℥) occasionally, and to take a tonic of bark and acid.

D, an Artisan from the Railway workshops; is much exposed to glare and heat of the furnace; suffers from chronic inflammation of the conjunctiva; complains more of itching than of pain. The palpebral is more affected than the sclerotic conjunctiva. Is a spirit drinker and a heavy smoker. Advised to give up spirituous drinks, to reduce tobacco smoking to the minimum, to bathe his eyes repeatedly with cold water, to use a weak lotion of the acetate of alum, and, if practicable, to change his trade.

E, a boy with irregular vascularity of the sclerotic conjunctiva, considerable turgescence of the palpebral conjunctiva, much lacrymation, intolerance of light and corrugation of the eyebrows; skin dry; anxious expression of face. Suffers from lumbrici and ascarides. Treatment—compound santonine powder; castor oil with turpentine; enemata of lime water or of solution of salt; weak alum lotion to the eyes; afterwards, bark and acid, good food and iron.

F, a native female. Conjunctiva much inflamed; chemosis. Sclerotic conjunctiva more congested than the palpebral; much pain; sensation as if a foreign body were in the eye; lacrymation; intolerance of light. Looks as if recovering from a severe sickness. Has had fever and was unconscious for three days. Kalikum(1) was put into both eyes. Discontinuance of all native remedies; to bathe the eye with warm water; warm water compresses to both eyes, plantain leaf shade, and rest in the house. Subsequently, cold water compresses; sluicing the eyes with cold water; weak solution of the acetate of alum.

Further illustrations need not be given. The causes of the disease may be *atmospheric,* such as cold, heat, moisture, wind or other less apparent causes; or *mechanical,* as from rubbing,(2) over exertion of the eyes, dust, smoke, medicinal irritants, injuries, particular occupations, and foreign bodies generally; or *constitutional,* as from general bad health, bad habits, malaria, struma, syphilis, mercury, gout, rheumatism or leprosy, the result of derangements of the primæ viæ, of the liver, kidney or uterus. Amongst children, worms and teething are common causes of simple conjunctivitis.

The *objective* symptoms vary little in their character in

(1.) Kalikum is a native remedy for ophthalmia which contains several violent irritants.

(2.) Artificial ophthalmias from hand-rubbing and from the introduction of foreign matters into the eyes are sufficiently common in India. The observant practitioner soon learns to detect these cases.

the different cases of simple ophthalmia, but the *subjective*, depending as they do so much upon the sensitiveness of the patient's system, will exhibit every variety of modification, from the excruciating agony complained of by a European when a grain of sand has become fixed between the upper lid and eyeball, down to the total unconsciousness exhibited by the native cooly of the fact that his eyelids are encrusted with the secretion of weeks, and that his retrotarsal folds are nearly filled with dirt and dust. The European generally complains of pain,⁽¹⁾ stiffness, heat and discomfort in the eye, sometimes also of itching. He suffers from lacrymation, slight intolerance of light, and from a sensation as if a foreign body had gained admission to the eye. The eye, when examined, appears either partially or wholly congested and vascular; at times the disease is limited to a leash or zone of vessels, at other times the redness is equally diffused over the whole membrane. Sometimes one eye only is affected, at other times, both eyes are involved. The lids are occasionally glued together, owing to the mucinous secretion from the Meibomian ducts.

Treatment.—The *treatment* of simple conjunctivitis will depend very much upon the cause and extent of the disease. Is the cause a local⁽²⁾ or constitutional one? is the primary question. Constitutional derangements must be treated on general principles; local causes of the disease must be removed; the organ should be protected from glare and put at rest; cold or warm water bathing and compresses, as the feelings of the patient may indicate, will be found of use; a leech or two to the inner canthus may remove any excessive congestion in the case of healthy and full-blooded Europeans. The pigment of Iodine applied to the upper lid will mitigate intolerance of light, and weak lotions of the acetates of lead, zinc, or alum, will prove serviceable, if not *too soon, too long* or *too often* applied. Finally, copious sluicing with cold water, the free action of atmospheric air, and the occasional use of Tannin solution will remove all remains of congestion: if not, counter-irritation may be tried. A little simple ointment applied between the lids at bed time during the continuance of the disease, will, in this and other conjunctival affections, greatly promote the comfort of the patient.

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(1) This pain, in exceptional cases, is of a neuralgic character.

(2) Conjunctivitis in whatever form it occurs is generally a local disease. (Mooren.)

It is well to remember that simple ophthalmia may be both generated and kept up by confinement to a dark room, by the prolonged use of a shade or eye-compress, by the too frequent use of eye-lotions, by using lotions too strong, by too much sleep, by fullness of the portal system, by habitual constipation, and by tobacco smoking. There is considerable tendency to a recurrence of the affection, where the causes are constitutional, and where local causes continue to act upon the mucous membrane. In such cases the corneal conjunctiva is apt to suffer, and in proportion to its implication, so is the impairment of vision. When recovery from simple conjunctivitis is slow and unsatisfactory, a course of blood and nervine tonics, followed by change of air, will often, by improving the general health, cause the rapid disappearance of the remaining traces of the affection. It may be necessary for some time, especially in India, to protect the eye from glare, by recommending to the patient the use of neutral tint glasses.

CATARRHAL CONJUNCTIVITIS.

Synonyms—Catarrhal Ophthalmia. Country Sore-eye. Conjunctivite Catarrhale.

Of all diseases of the organ of vision those affecting the conjunctiva are the most numerous, and, of these again, catarrhal ophthalmia is, by far, the most common in Madras. Catarrhal conjunctivitis is an inflammation of the conjunctiva with mucous or puro-mucous discharge. By many it is regarded as the *type* of conjunctival inflammation, for, as Mr. W. Jones remarks "it is the form which inflammation of the conjunctiva excited by other causes besides atmospheric influence, injury for example, is most prone to assume." The disease may be *sporadic, epidemic,* or *miasmatic.* The disease commences with redness and swelling of the palpebral and retro-tarsal conjunctiva, including the caruncle and semi-lunar fold. There is generally very little pain, unless the sclerotic be involved. There is, however, considerable itching, some intolerance of light, a sensation as if a foreign body were in the eye, lacrymation, and serous exudation into and below the affected membrane. The discharge, scanty at first, becomes speedily mucous and abundant, and, finally, some pus appears, mixed with the more or less abundant mucous secretion. At the beginning of the disease, the patient is inclined to rub the eye freely to relieve the distressing itching. The result is considerable œdema just above the lower margin of the orbit, more vascularity below the equator of the globe, and more frequent minute extravasations of blood in the same locality. The affected membrane becomes uniformly red, congested, vascular and swollen; the redness passes from an increased vascularity, in which the blood vessels can be distinguished in their bright red reticulations, to an uniformly duller redness, in which separate vessels cannot be traced. As the disease subsides, the redness has more of a purple hue; the papillæ of the mucous membrane become prominent. The inner surface of the lids and the retro-tarsal fold present frequently a fine granular look, at other times the granulations are large, fungiform and red, with chemosis of the retro-tarsal folds. Exudation takes place from the free surface of the mucous membrane in the form of a flaky mucous or puro-mucous secretion; into the tissue of the membrane as a sero-fibrinous deposit, causing the conjunctiva to look chemosed; and below the membrane, in the form of a serous effusion which lifts up the conjunctiva, and causes it at times to overlap the margins of the cornea. In this locality there is sometimes a circle of blotches, the result of sero-lymphous effusions below the conjunctiva, the whiteness of which contrasts forcibly with the deep red of the rest of the mucous membrane. When the discharge from the free surface of the membrane has been suddenly checked by strong solutions of nitrate of silver, the interstitial chemosis is frequently increased, and the sub-mucous effusion may become even purulent. I have seen sub-conjunctival abscess produced in this way.

The morbid action frequently passes by the lachrymal ducts into the recesses of the lachrymal gland, causing increase of its secretion, and through the derivative canals into the nasal cavity. Œdema of both lids takes place to a greater or less extent in all well-marked cases of the disease. The ocular conjunctiva is secondarily affected, and is the first portion of the membrane which regains its normal appearance on the subsidence of the disease. The corneal epithelium is at times dulled, either in consequence of the extension of the disease, or as the result of rubbing to relieve itching, or from maltreatment and want of cleanliness. There is increased secretion from the Meibomian glands which mats the cilia, and glues together the lids at night. The inflamed membrane frequently exhibits minute ecchymoses, the result of capillary rupture; these extravasations are much increased by rubbing, whether it be to relieve the sensation of itching, or to secure the success of malingering. It is well to be aware of this, because cases of catarrhal ophthalmia, induced artificially or willingly aggravated after invasion, are by no means infrequently met with in schools, asylums, among native servants, among the workmen in Government establishments, and even among sepoys. The wilful propagation of the virus was, at one time, by no means uncommon in the schools and asylums of Madras. Vigilance and severity have checked the evil, but it is not yet quite eradicated.(1)

Suspicion may be entertained when catarrhal ophthalmia becomes a more or less permanent presence in an Institution; when the sclerotic conjunctiva is congested out of all proportion to the congestion of the palpebral conjunctiva; when the lower half of the sclerotic conjunctiva is congested more than the upper; when minute extravasations are seen in considerable numbers below the equator of the eye; when there is unusual œdema of the lower lid; when foreign matter is found lodged within the lower lid; and, when one eye is affected some considerable time before the other. Much vigilance is required in India, on the part of the medical man to avoid imposition.

The disease may arise from local or from constitutional causes; it frequently follows injuries of the eye, operations on the eye, and foreign matter admitted to the eye. The causes of simple ophthalmia, already considered, are also causes of sporadic catarrhal ophthalmia, for it follows cold and heat, glare and dust, unusual exertion of the eyes, smoke, fumes, &c. Again it is often symptomatic of general derangements of the system; children suffer from it more frequently than adults; females more than males; strumous more than healthy children, more especially if they also suffer from worms. Derangements of the blood, as from rheumatism and gout, appear to occasion the disease; derangements of the primæ viæ, kidney, uterus and genito-urinary canals are, at times, accompanied by a puro-mucous discharge from the conjunctiva.

In Madras the disease is seen very frequently in its *epidemic* and *miasmatic* forms. It is generated of dirt, neglect, and foul miasmatic emanations, the result of the unsanitary state of the localities in which many native huts are found. In such localities it is continually present, either in its acute or chronic miasmatic form, and from such localities it may issue forth repeatedly during the year, to spread far and wide as an epidemic. It spreads by direct contagion, for all diseases of the conjunctiva with mucous, puro-mucous, or purulent discharges are eminently contagious. In certain states of the atmosphere, catarrhal ophthalmia is also *infectious,* eminently and rapidly so. Within a few hours the disease will spread through all the wards of an hospital. The disease is *endemic* in Madras, and is met with more or less at all seasons. During the rains, and in the hot months, it becomes epidemic, and affects natives inhabiting the poorer and dirtier localities very extensively. Catarrhal ophthalmia, in its miasmatic and epidemic forms, is pre-eminently a disease of the poor, the dirty, the strumous, and the famished. It forms a close alliance with congregation, dirt, bad smells, insufficient water-supply, foul air, glare and dust. It is a disease which, in its endemic form, can only be eradicated by cleanliness, segregation, good air, pure water, and sufficient food. Enlarged spleen does not constitute a more delicate test of the presence of a malarial poisoning in a locality, than does catarrhal ophthalmia of the poisoning of air, earth and water, in those unhealthy spots, in which the disease is born and bred, and from which, in certain states of the atmosphere, it issues in the epidemic form. In its endemic form it is a true miasmatic ophthalmia ; the sufferers from it, more especially from the chronic form of it, remind one of the ophthalmic night men of London, and of the victims of "la mitte" in Paris. The swollen eyelids, bleared and gummy eyes, dulled corneæ, excoriated tarsal margins, beet-root colored conjunctivæ, and puro-mucous discharges sufficiently characterize the disease ; the boundaries between which and purulent ophthalmias are often very indistinct.

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(1) Catarrhal ophthalmia is readily produced by the application of chunam to the conjunctiva.

Catarrhal ophthalmia is rare among the better classes. When it appears in European families it can generally be traced to contagion communicated by native servants ; the children of the house being first affected.

The line of demarcation between simple ophthalmia and catarrhal ophthalmia is, at times, as indistinctly marked, as between catarrhal and purulent ophthalmia. Very slight additional irritation will convert a simple into a catarrhal inflammation, and a catarrhal into a purulent.

It must be borne in mind that, in consequence of malpraxis, catarrhal and other ophthalmias undergo considerable change of character; various irritants and severe caustics are applied to the membrane by native practitioners, which have the effect of aggravating the disease and of altering most seriously its distinguishing features. In some cases I have seen sclerotitis, keratitis, perforating ulcer and staphyloma of the cornea and iris result from the native treatment of simple cases of catarrhal ophthalmia; granular lids or a state of incurable chronic ophthalmia, by no means infrequently constitute the sad sequelæ of that utter recklessness which characterizes native medication of affections of the eye.

Catarrhal ophthalmia, whether subsiding spontaneously or as the result of treatment, has a tendency to reach a stage of recovery just short of health. The remains of the disease are apt to linger in the lids, and some care is required in order that the morbid congestion may not become chronic. This chronic congestion is apt to be kept up by the prolonged use of lotions, by want of attention to cleanliness, by errors in diet, by a strumous habit of body, and by the development of granulations in the conjunctiva. This termination of catarrhal opthalmia is very common among the poorer classes of native children. Externally, the lids, especially the upper, appear much swollen and deformed; there is considerable intolerance of light; there is also a tendency to sclerotic and corneal complications. In such cases the discharge may almost entirely cease, leaving a smooth swollen vascular membrane which readily everts on raising the upper lid, and which appears like a ripe cherry; this type of the disease is accompanied with much photophobia and spasm of the orbicularis palpebrarum. The conjunctiva in such cases generally bleeds freely on being touched.

An uncomplicated attack of Catarrhal Ophthalmia occurring in a healthy person of cleanly habits, may be expected to run its course in about a fortnight, without special treatment, provided the eyes be kept clean, and frequently bathed with warm water. The duration of the disease may, however, be curtailed to eight or ten days by judicious treatment.

Two modes of treatment have been recommended for the disease; first, the *abortive* treatment by which the disease is promptly arrested in its early stage; and, secondly, the *palliative*, by which the disease is gently influenced by mild remedial measures, the object being rather to conduct the disease safely to its termination than to cut short its natural duration. Both modes of treatment are successful, but it requires some experience to select the cases most suitable for each. It is well to remember the several stages of the affection. At first the mucous membrane is dry; the secretion which appears is watery and mucinous, then mucous, and, finally, puro-mucous, and it is by observing the character of the secretion more especially, that we are principally guided in selecting our applications to the inflamed membrane. So long as the membrane is dry or is only moistened with a watery discharge, stimulants and astringents are likely to aggravate the inflammatory action, while, on the other hand, soothing applications will afford relief. In this early stage simple water or poppy-head fomentations are to be used. When the discharge is becoming mucous, you may apply to the adult eye once or twice daily a solution of Nitrate of Silver (gr. ii. or iii. ad. ℥), directing the employment of weak lotions of the Sulphate or Acetate of Alum, of the Acetate of Zinc, or of Tannin dissolved in Glycerine. These lotions may be used warm, lukewarm, or cold as the patient's feelings shall dictate. A shade should be worn, and simple ointment used at bed-time to prevent glueing together of the lids. When the discharge becomes mucous and more abundant, a stronger solution of the nitrate (gr. v. ad. ℥) may be lightly brushed over the affected membrane once or twice a day, and the lotions may be used a little stronger. As the discharge diminishes in quantity, so ought we to diminish the strength of the applications, and, at the same time, warm lotions should be abandoned for the eye douche, or for sluicing of the eye with cold water. Should the disease lurk in the upper lid, the rapid application of a strong solution of the nitrate of silver, once every two or three days, with the external application of the Iodine pigment, and the occasional use of the Tannin solution will "speed the parting guest." You will remember that the European is far less tolerant of strong applications than the native. In the case of the former you will use solutions of nitrate of silver, &c., only half as strong as those you find necessary in the case of the native patient. Remember, also, that the European female is more sensitive than the male, and the child than the adult. Remember, also, that the skin of some European patients is peculiarly sensitive, and that applications, such as pigment of Iodine, unfelt by one patient, cause exquisite torture to another. If the case be a fit one for the *abortive* treatment, you will find that the prompt application of a solution of nitrate of silver (gr. x.—xx. ad. ℥) by means of a brush to the affected membrane will, at times, arrest the disease. The application may be repeated twice, daily, for the first few days, and a cold water compress should be applied to the affected eye or eyes. Should the membrane become dry, swollen, and angry under the treatment, the *abortive* plan must give way to the *palliative.* While pointing out the use of caustic applications to the inflamed conjunctiva, I would here, once for all, warn you against their abuse. The most sad results follow the use of strong caustic solutions, as may be seen daily in the experience of the Eye Infirmary.

Complete segregation of the patient is required, for the disease is contagious if not also infectious. At first it is well that the patient should wear a shade, so arranged that glare be kept from the eye without excluding fresh air. As the disease subsides the eye should be freely exposed to the air, and the constant application of lotions should be dispensed with. Of course great cleanliness should be insisted upon, and such advice should be given as shall save the sound eye,—if only one eye be affected,—from the risk of contagion.

In many cases the disease occurs in young persons of a strumous habit. In such subjects it is apt to become obstinate and to end in granular lid. Boys from the several asylums and schools; children after attacks of measles and small-pox; young persons suffering from vermination; women nursing infants and haggard from want; young females with uterine derangement and patients suffering from any dyscrasia are very apt to exhibit the strumous type of catarrhal ophthalmia. In such and such like cases, the disease requires constitutional as well as local treatment. The latter must be gentle and palliative, for strong applications inevitably engender granular lid and chronic ophthalmia. Counter-irritation by means of Iodine pigment, nitrate of silver blisters, &c., are very useful, and blood and nervine tonics must be given, with good diet, and, if need be, stimulants. These cases give much trouble, and are often only finally cured by change of air.

When the fibrous envelope of the eye is implicated in the inflammatory action, the pain becomes more decided and somewhat rheumatic in character; the intolerance of light is also greater; when the eye is examined, you will see the circumcorneal carmine blush which reveals the presence of sclerotitis. This is the disease called *catarrho-rheumatic conjunctivitis.* In such cases you must use milder solutions of the nitrate of silver, with warm solutions of the acetate of alum, to control the conjunctival affection, after you have checked the sclerotic complication by the local application of Belladonna pigment, and by the internal administration of grey powder combined with quinine and opium, or of Dover's powder; or of grey powder combined with morphia, quinine, and small doses of the tartrate of antimony. Should the sclerotic affection threaten to become chronic, then counter-irritation will be of value; subsequent benefit will be derived from a course of the hydriodate of potass or of the turpentine mixture, followed by tonics,—arsenic for example,—and change of air. In the treatment of ordinary cases of catarrhal ophthalmia, no great change in the diet is called for, as a general rule, nor is it always necessary that purgatives should be given. In this, as in all cases of ocular disease, the physician must use his common sense, withholding from the well-fed and robust what he must give to the famishing and anemic.

In some cases chemosis of the conjunctiva is a very prominent symptom. When this depends upon the mechanical irritation of rubbing, it is frequently watery like a bleb of pemphigus; when it depends upon inflammatory exudation into the tissue of the membrane itself, the swelling is generally firm, and not readily compressible; when the effusion is principally below the conjunctiva, then we see irregular white elevated patches close to the base of the cornea, at times, surrounding that organ with a circle of milky-looking elevations. These elevations are irregular in form and size, and often overlap the edge of the cornea; they depend upon serous or lymphous exudations into the subconjunctival tissue. In some cases the corneal epithelium itself becomes slightly hazy. Chemosis is best removed by pressure. In some cases the warm water compress is most useful; in others the cold water compress, and in others the dry compress answers best. Astringents, such as the acetates of lead, alum, or of zinc, are also of great service. It was at one time the practice to scarify congested lids, and to incise the chemosed conjunctiva in cases of conjunctival inflammations of the catarrhal and purulent types; my own experience is against the practice, but in favour of pressure combined with cold or heat.

Should granulations appear in the palpebral conjunctiva, whether as minute scattered miliary papules, lighter in color than the surrounding tissue, or as more prominent, irregular, and flattened elevations, care should be taken to conduct the constitutional and local treatment judiciously; otherwise a state of chronic persistent ophthalmia may be induced, which may ultimately most seriously impair vision,—a condition of the mucous membrane in which constant recurrences of disease may be expected. Gentle local astringents as the acetate of copper, the eye douche and counter-irritation should be had recourse to, whilst the requirements of the general system should also be attended to in the shape of tonics, good food, stimulants, and change of air. In such cases the careful employment of mechanical pressure to the affected lid, either in the form of a compress secured with a bandage, or in that of a compressorium, such as has been suggested by Dr. Stokes, is likely to prove of great service.

Remember that, in native practice, you may have a violent simple ophthalmia superadded to the catarrhal attack, or complications of the cornea, and, in such cases, you must soothe and calm before you can stimulate or astringe. Secure rest for the affected eye, absence of glare, free admission of fresh air, and perfect cleanliness; change your astringent applications from time to time, and change the temperature of your lotions to suit the feelings of your patients. In this way you will be able to conduct to a successful termination the great majority of cases of simple catarrhal ophthalmia.

Should an epidemic of catarrhal ophthalmia appear in an asylum or school where many children are congregated together, the following sanitary precautions—amongst others—should be adopted:—

Inmates.

1. The inspection of the inmates twice daily, in order that such as have congested lids or discharges from the eyes may be transferred to Hospital; the careful

regulation of basins, towels, &c., so as to arrest the spread of the disease; the insisting upon strict cleanliness and on daily exercise in the open air of the inmates; the segregation of the affected, and the careful prevention of all communication between them and those yet unaffected; the watching against the artificial spread of the disease, and the adoption of severe measures for the punishment of offenders.

Asylum and Hospital.

2. The setting apart of separate wards for the treatment of ophthalmic cases, and the separation of the less severe from the more severe cases; the thorough cleaning, airing and white-washing of all rooms, wards, and dormitories; the diminution in the number of beds in the dormitories; the increase of the ventilation of each room and ward, taking care, however, to exclude glare and dust; the banishment of sponges from the Hospital, and the substitution for them of tow, cotton wool, or lint.

The neighbourhood.

3. The careful inspection of the neighbourhood, so as to detect the existence of unsanitary conditions, and to trace out the probable source of the disease; this includes inspection of the parcherries and bazaars, and the adoption of means for preventing communication with infected localities.

These general precautions would, with easily-understood modifications, be applicable to a regiment of soldiers in which catarrhal or purulent ophthalmia had appeared in an epidemic form. In such a case the medical officer would have to trace out the cause and source of the disease. To this end he would have to inspect the barracks, its neighbourhood, the parcherry and bazaars; he would have to look to the health, duties, diet, and exposure of the men; he would have to provide for the segregation of the affected, and for the due sanitation of the barracks and hospital; he would have to place basins, baths, towels, lavatories under surveillance; he would have to institute frequent inspection parades and to protect the men from glare, dust, and infected localities; he would have to prolong the convalescence of affected men, and be on his guard against the appearance of granular lids; he would have to consider the climate of the station, the peculiarities of the season, the locality of the barracks, and general endemic constitution of the locality; he would have, finally, to obtain the hearty co-operation of the military authorities in maintaining a vigilant and stringent surveillance of the regiment, and of all the circumstances which are acting upon, and influencing its health.(1)

APPENDIX.

Formulæ extracted from the Formulary of the Eye Infirmary; to which are added a few other prescriptions.

B. P., *i. e.* British Pharmacopœia.
M., *i. e.* Moorfields' Pharmacopœia.(2)

Fotus.—Fomentations.

1. Poppy-head fomentation (B. P.)
Take of Poppy Capsules, bruised and freed from seeds ℥ iv.
Distilled water Oiii.
Boil for 10 minutes and strain.

2. Belladonna fomentation (M).
Take of Extract of Belladonna ʒi.
Boiling water Oi.
Dissolve.

3. Belladonna and Opium fomentation.
Take of Extract of Belladonna ʒi.
Extr. of Hyoscyamus ʒi.
Extr. of Opium ʒi.
Boiling water Oi.
Dissolve.

4. Atropine fomentation.
Take Solution of Atropine (gr. 2 ad. ℥) ʒi.—ʒii.
Boiling water Oi.
Mix.

Guttæ.—Eye-Drops.

1. Alum Eye-Drops.
Take of Alum gr. i.
Distilled water, or Rose water ℥ i.
Mix.
(and various strengths from gr. i. to gr. xxx. per ounce.)

2. Sulphate of Copper Eye-Drops.
Take of Sulphate of Copper gr. i.
Distilled water, or Rose water ℥i.
Dissolve.

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(1) See an admirable paper on Ophthalmia, with supplement, in the Archives of Medicine, vol. iii, page 183, by Dr. Jeffrey Marston, Assistant Surgeon, Royal Artillery.

(2) The Royal London Ophthalmic Hospital.

(and various strengths from gr. i., per ounce, up to a saturated solution).

3. Sulphate of Zinc Eye-Drops.

Take of Sulphate of Zinc. gr. i.
Distilled water, or Rose water ℥i.
Dissolve.

(and various strengths from gr. i. to grs. iv. per ounce).

4. Acetate of Alum Eye-Drops.

Take of Sulphate of Alum ʒi.
Acetate of Lead ʒi.
Wine of Opium ʒiiss.
Water ℥iii.

Separate the Sulphate of Lead ; heat gently the remaining fluid and filter, adding the Wine of Opium.

5. Acetate of Copper Eye-Drops.

Prepared as the Acetate of Alum Eye-Drops.

6. Acetate of Zinc Eye-Drops.

Take of Acetate of Zinc gr. i.
Distilled water, or Rose water ℥i.
Mix.

(and various strengths from gr. i. to grs. vi. per ounce.) This preparation may also be made as the Acetate of Alum Eye-Drops.

7. Acetate of Lead Eye-Drops.

Take of Acetate of Lead ʒss. ad. ʒi.
Distilled vinegar ♏. xv. ad. ʒss.
Distilled water ℥vi.
Dissolve.

(and various strengths up to a saturated solution).

8. Sub-acetate of Lead Eye-Drops (B. P.)

Take of Solution of Sub-acetate of Lead ʒii.
Rectified Spirit ʒii.
Distilled water ℥xixss.
Mix, and filter through paper.

9. Chloride of Zinc Eye-Drops.

Take of the Chloride of Zinc gr. i.
Distilled water ℥i.
Dissolve.

(and various strengths from gr. i. to grs. xxx. per ounce).

10. Corrosive Sublimate Eye-Drops.
Take of Chloride of Mercury gr. i.
Hydrochlorate of Ammonia grs. viii.
Distilled water ℥viii.
Dissolve.

11. Hydrocyanic Acid Eye-Drops.
Take of Diluted Hydrocyanic Acid ʒi.
Distilled water ʒvii.
Mix.

12. Wine of Opium Eye-Drops.
(used either pure or diluted).

13. Nitrate of Silver Eye-Drops.
Take of Nitrate of Silver gr. i.
Distilled water ℥i.
Dissolve.

(and various strengths from gr. i. per ounce up to a saturated solution of gr. xx. per drachm.)

14. Tannin Eye-Drops.
Take of Tannin ʒss.—ʒi.
Glycerine ʒii.
Water ʒv.
Dissolve and filter.

15. Liquor Potassæ Eye-Drops.
Take of Liquor Potassæ ʒi.
Distilled water ℥iv.
Mix.

(Liquor Potassæ is also used undiluted, and diluted of various strengths.)

16. Turpentine Eye-Drops.
Take of Oil of Turpentine ʒi.
Olive Oil ʒiii.
Mix.

17. Atropine Eye-Drops.
Take of Sulphate of Atropine gr. ii.
Diluted Nitric Acid ♏. iii.
Distilled water ℥i.

Dissolve the atropine in the acid and add the water. (Various strengths are used from grs. ii. to grs. viii. per ounce.)

18. Iodide of Potass Eye-drops. (M).

Take of Iodide of Potass gr. iii.
Distilled water ℥i.
Dissolve.

N. B.—A little glycerine is a useful addition to most of the eye-drops.

Lotiones.—Eye Waters.

These consist of weaker solutions of the Eye-drops. The following lotions may be added to the list:—

1. Vinegar Lotion.

Take of Distilled Vinegar ʒss.
Water ʒviiss.
Mix.

2. Aromatic Vinegar Lotion.

Take of Aromatic Vinegar ♏ v.
Spirit of Nitrous Ether ʒi.
Water ℥vi.
Mix.

3. Arnica Lotion.

Take of Tincture of Arnica ʒii.
Distilled water ℥iv.
Mix.

4. Acetate of Ammonia Lotion. (1)

Take of Opium Wine ♏ xx.
Solution of the Acetate of Ammonia ℥ i.
Mix.

5. Acetate of Ammonia Lotion. (2)

Take of Solution of Acetate of Ammonia ℥i.
Glycerine ʒii.
Rose water ℥ii.
Mix.

Pulveres.—Powders.

1. Calomel.
2. Acetate of Lead finely pulverized.

These powders are used (1) for insufflation, and (2) for application in quantity to lids affected with granular disease.

Linimenta.—Liniments.

1. Chloroform Liniment. (M.)

Take of Chloroform ℥i.
Olive Oil ℥i.
Mix.

2. Belladonna and Chloroform Liniment.

Add Extract of Belladonna ʒi. to the Chloroform Liniment.

3. Aconite Liniment (No. 1.)—(B. P.)

Take of Aconite root in powder ℥xx.
Camphor ℥i.

Rectified Spirit *f* ℥xxx. or a sufficiency.

Moisten the aconite root with a portion of the spirit, and macerate for seven days; then percolate into a receiver containing the camphor, until the product amounts to one pint.

4. Aconite Liniment (No. 2)—(M).

Take of Tincture of Aconite ℥i.
Glycerine ℥i.
Mix.

PLASMATA.—GLYCERINATES.

1. Belladonna Plasma (or Belladonna Pigment).

Take of Extract of Belladonna ʒii.
Glycerine ʒi.
Water ʒi. Mix.

This plasma may be made of various strengths. It is expedient not to increase the quantity of glycerine, otherwise absorption by the skin is interfered with.

2. Sulphate of Copper Plasma. (M.)

Take of Sulphate of Copper gr. xxiv.
Starch ʒiss.
Glycerine ʒxss.

Dissolve the sulphate of copper in the glycerine; add the starch. Boil on a slow fire, stirring until the plasma becomes of the proper consistence.

3. Plasma of Ammoniated Mercury. (M.)

Take of Ammoniated Mercury ʒss.
Starch ʒiss.
Glycerine ʒxss.

Mix the mercury with the starch, and then add the glycerine; proceed as with Plasma No. 2.

4. Plasma of the Nitrate of Mercury. (M.)

Take of the Nitrate of Mercury gr. xl.
Starch ʒiss.
Glycerine ʒxss.
Prepare as in Plasma No. 2.

5. Plasma of the Red Oxide of Mercury. (M.)

Take of the Red Oxide of Mercury. gr. xlv.
Starch ʒiss.
Glycerine ʒxss.
Prepare as in Plasma No. 2.

PIGMENTA.—PIGMENTS.

1. Iodine Pigment. (M.)

Take of Iodine ʒi.
Rectified Spirit ℥i.
Gum mastick ʒss. Dissolve.

(In Europeans and in persons of delicate skin this pigment should be used of less strength : the Iodine being reduced from ʒi to ʒss.)

UNGUENTA.—OINTMENTS.

1. Ointment of the Nitrate of Mercury (M.)

One part of the ointment (P. B.) to seven of lard; a milder ointment has one part to nine of lard.

2. Ointment of the Red Oxide of Mercury (M.)

One and a half parts of the ointment (P. B.) to six and a half parts of lard.

3. Simple ointment. (M.)

Take of Wax ʒii.
Lard ʒvi. Melt together.

4. Ointment of the Yellow Oxide of Mercury.

(Pagenstecher's Ointment.)
Take of the Yellow Oxide of Mercury ʒi.
Mixed Fats ℥i.
Mix carefully and thoroughly.

GENERALIA.—GENERAL PRESCRIPTIONS.

1. Nervine tonic.

Take of Tincture of Nux Vomica ʒiv.
Tinct. of Calumba ℥iss.
Compound Tinct. of Cinchona ℥iss.
Mix.

For adults a tea-spoonful up to a dessert spoonful twice or thrice daily, one hour before food.

Take of Oil of Turpentine ℥i.
Mucilage ℥ii.
Cinnamon water ℥vi.
Mix.
Dose ʒii. to ℥ss. three times daily.

4. Compound Santonine Powder.

Take of Santonine ʒi.
Ginger ʒi.
Seeds of Butea Frondosa ʒiii. Mix.

(The seeds are to be decorticated and powdere

Dose for an adult 20 grains morning and even lowed on the third day by a dose of Castor oil ar pentine.

5. Hypodermic Injection.

(Prof. von-Graëfe's).

Take of the Acetate of Morphia gr. iv.
Distilled Water ʒi.
Mix.

One grain in every 15 minims; dose from 5 to 10

ART. IV.—*Report on the Febrifuge Properties of the Leaves of Chinchona.* By W. N. CHIPPERFIELD, Acting Physician, General Hospital.

***Proceedings of the Madras Government, Revenue Department,* 23rd *May* 1866.**

No. 421. Read the following letter from the Officiating Principal Inspector General, Medical Department, to the Secretary to Government, Revenue Department, dated Fort Saint George, 15th May 1866, No. 173 :—

1. I have the honor to forward a report on the febrifuge properties of the leaves of Chinchona, as directed in Proceedings of Government, 12th June 1865, No. 1283, Revenue Department.

Dated 7th May 1866.

2. Dr. Chipperfield used the remedy in twenty-six cases of fever, but it was only in cases Nos. 6, 11, 16, 24, and 26, given in the table, that it can be considered as having acted as an antiperiodic, and these were evidently very mild cases of fever. Dr. Chipperfield observes "a more extended trial of the leaves is required before any correct conclusion can be arrived at, as to their value as an antiperiodic." Instructions for a fair trial of the leaves and twigs are embodied in the letter about to be issued to the Medical Officers selected to carry out the testing of the alkaloids. I respectfully suggest that Dr. Chipperfield's report be printed and circulated to these gentlemen.

3. It is not said when the leaves were gathered, but it must have been recently. I do not consider that the dryness described by Dr. Chipperfield materially affected their medical powers, but should it be found to be the case, their use must be very limited

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Report on the febrifuge properties of the leaves of Chinchona.

1. On the 29th of November 1865 I received two wax-cloth parcels, containing, the one 8 lbs. of the leaves of Chinchona Succirubra, and the other 8 lbs. of the leaves of Chinchona Condaminea, with instructions to make trial of various preparations of these leaves in cases of fever. The leaves were not in such a fresh state as I expected to find

them, but were so nearly dry as to be capable of being rubbed into a coarse powder.

2. I wrote out the following formulæ, and gave them to the Superintendents of the Dispensing Department, for their guidance :—

I.—Cold Infusion of Chinchona leaves.
Take of Leaves of Chinchona 1¼ oz.
Diluted Sulphuric Acid ¼ oz.
Cold water 20 oz.
Infuse for twelve hours and strain.

II.—Acid Decoction of Chinchona leaves.
Take of Chinchona leaves 1¼ oz.
Diluted Sulphuric Acid ¼ oz.
Cold water 20 oz.
Boil for ten minutes and strain.

III.—Stronger Decoction of Chinchona leaves.
Take of Chinchona leaves 1 oz.
Cold water 6 oz.
Boil for ten minutes and strain.

3. There was some waste in consequence of decomposition occurring in the infusion, which was necessarily kept ready-prepared in case of its being required; but by management this waste was reduced to the lowest possible amount.

4. The appended table shows the result of the trial. Preparation No. I. was prepared entirely from the Chinchona Succirubra, and was administered in doses of 3 or 4 oz., three times daily, in cases Nos. 1 to 12 in the table.

5. Preparation No. II. was prepared partly from the Chinchona Succirubra and partly from the Chinchona Condaminea, and was administered in doses of 4 oz., thrice daily, in cases 13 to 20.

6. Preparation No. III. was prepared entirely from the Chinchona Condaminea, and was administered in doses of 6 oz., twice daily, in cases 21 to 26.

7. I observed no difference, as regards febrifuge property, in the leaves of the two species of Chinchona submitted to trial; but, although the table does not show this, it appeared to me that preparation No. III. was the most effectual.

8. Preparations Nos. I. and II. were used as a tonic, with the best results, in doses varying from 2 to 4 oz., thrice daily, by nineteen patients, some of whom had previously suffered from fever and remained in a debilitated condition.

9. I think that cases Nos. 4, 5, 7, 13, 14, 15, 17, 21, and 23 may fairly be removed from the table, as they were cases either of simple febricula, or of such mild intermittents as might readily have been cured without resorting to any preparation of Chinchona.

10. So far as my experience enables me to judge, I am led to the conclusion that in simple cases of mild intermittents the remedy may be trusted to, but that in severe cases of malarious fever it is not one on which any great reliance can be placed, and that it is in no way comparable to the extracted alkaloid salt, Disulphate of Quinine, as a genuine trustworthy antiperiodic.

11. I observe that in Mr. Howard's Report on the Chinchona leaves from Ootacamund, (Madras Quarterly Medical Journal, Volume VII., page 425,) it is stated that the quantity of Quinine contained in the leaves is very small, viz., 0·11 per cent. of alkaloid, soluble partly in alcohol and partly in ether, and 0·19 per cent. contaminated with an astringent extractive matter. Granting that 0·30 per cent. of this impure Quinine is obtainable from the leaves, and that all of this is taken up by the water of the infusions and decoctions I had made, one pint of preparation Nos. I. and II., would contain not quite 2¼ grains of Quinine, and each dose of 4 oz. would contain less than ½ a grain; and the dose, 6 oz., of preparation No. III. would contain about 1⅓ grain. But it cannot be supposed that any thing like the whole quantity of the Quinine is taken up by the water. However, as Mr. Howard points out, the Kinovic acid, which is abundant, may assist the action.

12. It appears to me that a much more extended trial of the leaves is required before any correct conclusion can be arrived at as to their value as an antiperiodic, but that the bitter infusion acts well in giving tone in cases of atonic dyspepsia and of debility, especially after fever; and I consider that the Infusum Chinchonæ Foliorum would be a useful addition to our list of bitter vegetable infusions.

13. Should the Principal Inspector General be of opinion that further experiment is desirable, I shall be happy to carry out his views on being furnished with another supply of the fresh leaves.

Table of Fever Cases treated by preparations of Chinchona leaves.

No. of case.	Type of Fever.	No. of days taking the remedy.	No. of doses taken.	No. of days Fever was		Remarks.
				Present.	Absent.	
1	Tertian......	6	18	1	5	Cured, but had taken large doses of Quinine for five days previous to commencing the remedy.
2	Remittent...	8	24	8	0	Fever uninfluenced by the remedy.
3	„ ..	9	27	0	9	This was a relapse. Took Quinine for three days before commencing the remedy.
4	Quotidian...	5	15	1	4	A mild case. Cured.
5	„ ...	5	15	1	4	Do. do.
6	„ ...	6	18	3	3	Cured.
7	„ ...	2	6	0	2	Do. A mild case.
8	„ ...	4	12	4	0	Remedy without effect.
9	Tertian ...	6	18	3	3	Do. cured by Quinine.
10	Quotidian...	1	2	1	0	Remedy nauseated patient. Do.
11	„ ...	6	18	2	4	Cured.
12	„ ...	5	15	2	3	Quinine resorted to.
13	Febricula ...	5	15	1	4	A simple case. Cured.
14	„ ...	3	9	0	3	Do. do.
15	„ ...	3	9	0	3	Do. do.
16	Quotidian...	6	18	2	4	Cured.
17	„ ...	5	15	0	5	Do. A mild case.
18	„ ...	5	15	5	0	No effect. An obstinate case in a Bombay Marine. Transferred to Bombay.
19	„ ...	3	8	3	0	Cured by Arsenic.
20	„ ...	13	33	2	11	On each day when fever occurred took grains 15 of Quinine.
21	Common continued.	7	21	0	7	Cured.
22	Remittent...	10	20	8	2	A very obstinate case, still under treatment.
23	Febricula ...	1	2	0	1	A very mild case. Cured.
24	Quotidian...	3	6	1	2	Do. do.
25	„ ...	5	8	4	1	Quinine resorted to.
26	„ ...	4	8	2	2	A mild case. Cured.

(Signed) W. N. CHIPPERFIELD, Asst. Surgeon,
Acting Physician, General Hospital.

No. 422. ORDER THEREON, 23rd May 1866, No. 1,229.

1. Mr. Shaw will apply direct to Mr. McIvor for Chinchona leaves, as required.

2. The experiment should be tried with freshly gathered as well as with dried leaves. Even if drying the leaves affects their febrifugal qualities, their use will still be general among native growers, and it is desirable that this question, viz., the effect of drying the leaves, should be tested carefully.

(True Extract.)
(Signed) J. D. SIM,
Secretary to Government.

(True Copy.)
(Signed) W. R. CORNISH, Surgeon,
Secy. to Pl. Inspr. Genl., Mdl. Dept.

ART. V.—*On the Oxidation of Organic impurities in Water.*

By W. R. CORNISH, Surgeon; Secretary, Principal Inspector General, Medical Department.

A FEW weeks since the following letter was placed in my hands by Mr. Chipperfield, the Editor of this Journal, and I am glad to avail myself of the present opportunity of bringing Mr. Condy's suggestions to the notice of the profession in India, feeling that the subject has not yet met with the attention that it really deserves :—

DEVONSHIRE HOUSE,
BATTERSEA, *9th April*, 1866.

TO THE EDITOR OF THE
"MADRAS QUARTERLY JOURNAL OF MEDICAL SCIENCE."

SIR,

Will you oblige me by handing the accompanying pamphlet on the "Purification of Water and Air" to Mr. W. R. Cornish, whose paper on the Dietaries of the Madras Prisons has been reproduced in the "Social Science Review" for this month ?

Seeing that that gentleman is familiar with the use of the permanganate test for organic impurities in water, the knowledge and employment of which date from the introduction of my Patent Fluid, it has seemed to me that he might be interested to know that the same substance possesses the property of economically, rapidly, safely, and completely freeing water from all trace of organic taint. This important fact if generally known to, and taken advantage of, by residents in India, would be of incalculable service to them. As a preventive of cholera, I can conceive of nothing more likely to be beneficial. My conviction in this respect has received strong confirmation from the very favorable results obtained by Madras Medical Officers from the administration of Condy's Fluid in the treatment of cholera. In the "Medical Times and Gazette" of 10th March last, I observed in a letter by Dr. Howard B. Montgomery, on the subject of the treatment of cholera, a table, from which it would appear that in the hands of Mr. Evezard and Dr. Mackay the administration of Condy's Fluid resulted in a mortality no higher than 5·8 per cent. From what I know of the action on the human economy of the alkaline permanganates, I feel confident that if they are freely used and prescribed early, still more favorable results will be obtained.

I have respectfully called the attention of the Army Medical authorities to the advantages which would be found from the general use by the troops of this means of purifying water, but hitherto without the least success. If you or Mr. Cornish will only take the trouble to verify my statements, I feel certain that you will not fail to see the importance of them for the inhabitants of India generally, and particularly for the army.

I am, Sir,
Your's obediently,
H. B. CONDY.

Mr. Condy's pamphlet "On the Purification of Water and Air" I had already seen, and in some rough experiments with specimens of foul water performed about three years ago, I became aware of the fact that the alkaline permanganates were extremely effective in the oxidation of the organic impurities of water, and the thought then occurred to me that it would be quite practicable to use the "patent fluid" prepared by Mr. Condy as a purifyer of drinking water, but want of leisure and opportunity prevented my determining this point to my own satisfaction.

Since the receipt of the letter above given, I have felt it incumbent upon me to take the trouble to verify Mr. Condy's statements, by a few simple experiments, and the conclusions I have come to may not be destitute of interest at the present time, when the impurity of the potable waters of India is attracting so much attention as a possible source of disease.

Mr. Mayer* in his excellent "*Note on the Magnetic Oxide of Iron as a means of purifying water*" has, I think, clearly shown that the much vaunted action of this substance, and of many others which enter into the composition of filters, is more or less mechanical. According to Mr. Mayer, the magnetic oxide of iron removes very little more organic matter from water than does the Swedish filter paper of the chemist's laboratory. More recently it has been asserted that the oxide prepared by a special process (subjected to a red heat when mixed with a proportion of sawdust) does really possess a powerful influence in the oxidation of the organic impurities of water. This action, however, I suspect is more temporary than lasting.

I am afraid that, notwithstanding all the attention that has been given to the subject of filtration, science has not yet placed us in possession of a perfect filter, that is, of one that exerts both a chemical and a mechanical action, and that can be depended upon to work uninterruptedly in the decomposition and separation of organic particles, suspended or dissolved in water.

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*Madras Quarterly Medical Journal, vol. ix, page 219.

A filter lately introduced by a Mr. Lipscoombe is asserted to be capable, amongst other things, of removing salts of *lead* or *lime* which may be dissolved in water. The fact is denied by Mr. W. Valentin of the Royal College of Chemistry. With regard to a superabundance of lime in the form of carbonate, this gentleman tells us* that a filtering bed containing an admixture of caustic lime, would have the power of fixing the free carbonic acid and of precipitating the carbonate of lime, but that "the filtered water would become alkaline." Sulphate of lime would not be affected either by boiling or by filtering through caustic lime. "The efficacy of such a filter would speedily be lost."

Mr. Valentin says, "Lead can be no more removed from water than lime salts, without disturbing the composition of the water."

I mention these points, because we often are called upon to believe in the wonderful powers of newly patented filters, the truth being that none of them, except in a minor degree, exercise any other than a mechanical separation of particles in suspension. The old-fashioned Indian filter, when properly made and worked, is undoubtedly quite as efficacious as a more expensive apparatus coming to us under a grand and imposing name.

The only objection to the use of the filter of the country is, that the water which has been passed through it is liable to be polluted again before it is used.

This might easily be remedied by constructing the earthenware receptacle of a different shape, closing it at the top, and fitting it with a stop-cock below, so that the purified water should be secured from being soiled by dust, dirty hands, or utensils.

With the most perfect filtration, it must be borne in mind that organic substances in a state of solution are not entirely removed from water. Those which are mechanically suspended are no doubt left behind in the filter, but there is no evidence to show that the best filtered water may not contain noxious organic matter enough under certain circumstances to produce disease. Every one may easily satisfy himself that filtration does not separate all the organic or oxydizable matter in water. Let a specimen of filtered water be set aside in a clean bottle for a few days, covered so as to exclude extraneous matters. It will gradually become putrid in proportion to the amount of dissolved organic impurity present. At the same time let a similar specimen of water, to which two or three drops of Condy's Solution have been added be observed. In the latter case the organic matter is gradually destroyed, the permanganate reduced, and the water remains sweet, inodorous, and in a state perfectly fitted for domestic use.

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*Journal of Social Science, 1866, page 288.

Mr. Condy asserts that the fluid sold by him under the name of "Disinfecting fluid," and which consists mainly of a solution of the permanganates of potash and soda, may be safely and efficaciously mixed with drinking water, in quantity sufficient to effect the destruction of organic matter, without communicating any nauseous taste, or chemically objectionable ingredient to the water. This statement is not only fully borne out by my own observations, but is supported by the more valuable testimony of Professor Hofmann.* This gentleman observes that he has had many opportunities of satisfying himself of the efficacy of the permanganates as disinfectants. "Waters taken from stagnant ponds, highly charged with organic matters in a state of most active putrefaction, and emitting the most repulsive odour, were instantly deodorized by a comparatively small quantity of permanganate, or even of manganate of potassium or sodium. By careful manipulation, the operator may completely free water from organic impurity, introducing into it in exchange, only a minute quantity of an alkaline carbonate. This is rarely an objectionable, frequently rather a serviceable addition, especially in the case of hard waters, which are thus softened."

The quantity of the disinfecting fluid required to neutralize the noxious properties of organic matter in water, depends entirely upon the proportion of "oxidizable" organic impurity present. The permanganates have for some time been used by Chemists as tests for organic impurities in air or water. Condy's Solution when mixed in minute quantity with pure distilled water, gives a beautifully pink fluid, the colour of which remains unchanged so long as the atmospheric air is excluded, or contact with organic matter avoided. The rapid decolorizing action of organic matter upon such a solution has been taken advantage of by Chemists, to determine relatively the impurities present in air or water. The permanganate of potash or "chameleon" test does not show, in a perfectly reliable manner, the actual amount of organic matter present in a specimen of water, but it has been used by Drs. Allan Miller and Angus Smith, chiefly to indicate the amount of oxygen which the water requires for its purification. For all practical purposes, however, it may be said that a water to which "chameleon" has been added in quantity sufficient to communicate a faint pinkish tinge, and which color gradually fades away and disappears after twenty-four hours, is, to all intents and purposes, sufficiently purified of organic matter to become potable. This quantity may vary according to the foulness or purity of the water, from twenty or thirty drops of the concentrated purple fluid to one or two drops per gallon.

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*Report by the Juries of the International Exhibition, 1862, Class II, Section A. Chemical Products and Processes, page 108.

Specimens of drinking water used by the European troops in Fort St. George will decolorize in the proportion of six and eight drops of Condy's fluid per gallon. It takes several days, however, to completely discharge the color from a solution in the proportion of eight drops to the gallon. As it is the readily oxidizable matter in water which is really injurious, it will I have no doubt, be sufficient to add to drinking water merely a sufficient quantity of the permanganate to maintain a faint pink tinge for the space of a quarter or half an hour. Dr. Angus Smith,* in a pamphlet lately published, has remarked upon the slow decomposition of a portion of the organic matter as follows:—

"The organic matter which decomposes the "chameleon" in a minute or two must be carefully noted, but generally there is a greater quantity which decomposes very slowly, the results obtained for the latter is, I believe, of less value. Generally considerable permanency is obtained in ten or fifteen minutes, then the slow decomposition begins of quite another quality of organic matter, requiring hours or even days. The amount decomposed instantly is a true measure of the putridity, it is believed."

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* Examination of organic matter in water, with reference especially to Sanitary purposes.—(Pamphlet.) By Angus Smith, M.D.

Dr. Miller is of opinion that any instantaneous change in color is due to the presence of nitrites in the water, and that the instantaneous bleaching caused by the nitrites may be used in determining the amount of those salts. He maintains that the reducing effect occasioned by organic matter is always gradual. Dr. F. Macnamara,* Professor of Chemistry in Calcutta, who has lately reviewed this question, declares that Dr. Angus Smith's observation is the more correct, and that he has examined water which decomposed instantly a large quantity of 'chameleon,' though perfectly free from nitrites or other reducing agents than organic matter."

My own observations here in Madras entirely confirm those of Drs. Angus Smith and F. Macnamara.

The water of the "Seven Wells," samples from each of which have been recently analyzed by Professors Mayer and Wyndowe, is declared to be entirely free of nitrates or nitrites, and yet it effects an instantaneous reduction of a considerable quantity of chameleon. The complete effect, however, is not obtained with this water until it has stood for three or four days.

The organic matter in the several wells which supply the drinking water to the inhabitants of Fort St. George varies from four to nearly eight grains per gallon. In the specimens I have examined, the organic matter is apparently completely destroyed by the addition of Condy's fluid in the proportion of eight drops per gallon. The water so treated, upwards of a month ago, is still perfectly fresh, sweet, clear, and inodorous. The peroxide of manganese remains at the bottom of the vessel in the form of a brown flocculent precipitate, and although the specimens are standing in a room where the thermometer has averaged 90° Fah., so far as I can see, they seem likely to keep in the same wholesome condition for months or years, if permitted to remain undisturbed.

Another specimen of drinking water examined required only four drops of Condy's fluid to the gallon to free it completely of organic matter.

A further specimen from a well of noted purity requires even less than this.

The Medical officers of health for London in their "Memorandum of a plan of united action in the case of an epidemic of cholera," give the following formula for the purification of drinking water. "Add *one drop of Condy's disinfectant to a gallon of water*; stir it well and leave it for twenty-four hours to settle."* From what has been said it is evident that the question of *one* drop or of *ten* to the gallon must be a matter of consideration as regards each individual specimen of water. With a tolerably pure water one drop to the gallon might be quite sufficient, but when the organic impurity is in excess—as in the majority of well waters in the town of Madras—a larger quantity is needed. If, on the addition of the fluid, in the proportion of two or three drops to the gallon, the color is rapidly discharged, it is an evidence of the presence of organic impurity in considerable quantity. In each instance the correct porportion of fluid must be ascertained by actual experiment. This done, however, there is no reason why Mr. Condy's patent fluid or any other preparation of the alkaline permanganates, should not be brought into general use in the purification of water in India, and especially during those seasons when epidemic cholera is rife.

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* Indian Medical Gazette, page 97.

There can be no question but that the permanganate solution is completely effectual in the destruction of organic matter, dead or living. The immediate discoloration of the solution is, I suspect due, not to the presence of nitrites as supposed by Dr. Allan Miller, for it occurs in waters which contain no trace of such compounds, but to the oxidation of dissolved organic matter that is about to take on new forms, and the slower process of discoloration which follows, is probably explainable under the supposition that another portion of organized matter is possessed of sufficient vitality to resist for a time the influence of the oxidizing agent.

All physiologists and chemists are agreed that it is the presence of organic matter in water in its putrescent form that renders it, even in minute quantity, so objectionable for drinking purposes.

A water may contain a high proportion of organic matter, and yet be not only drunk with impunity but be perfectly wholesome. But the explanation in such a case is probably to be found in the fact that the organic particles, animal and vegetable, are alive, and not in a condition to become readily putrescent. The presence of chlorides in excess, would appear to exercise some influence upon organic matter, retarding or preventing its decomposition. I imagine that this is the case in regard to the well waters in Madras which, being chiefly drawn from below the sea level, abound in chlorides. The water used by the troops and shipping, although largely impregnated with organic matter, does not putrefy so readily as some other waters in which the proportion of organic matter is less. It is to this day a favorite water with Ship Captains, on account of its keeping so well upon the homeward voyage. If the presence of chlorides in more than average quantity does not exercise some influence upon the organic matter, I shall be glad if some of our chemists will be good enough to let us know what is the true explanation of the fact I have noticed.

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* Social Science Journal, March 1866.

It seems to me, and I say it with all respect and deference to the opinions of many eminent men, who have traced a connection between water impurity and disease, that in the present state of our knowledge, we are not justified in condemning a water, because upon chemical analysis it is shown to contain a larger proportion of organic matter than what is theoretically considered safe. Dr. Angus Smith has put this very clearly in his pamphlet, he says "the mere existence of organic matter is no proof of impurity. * * We must know the quality as well as the quantity. If the matter is peaty, consisting of the ordinary humous class of acids and salts, the colour may be very dark, and the water very unpleasant to look at, without being in any way, so far as I have ever heard, injurious to health."

A water that begins to be putrid, shortly after it is drawn from a well, must always be considered a dangerous water for drinking. The putrefactive process, however, is most rapid when the temperature is high. A mountainous jungle stream at a temperature of 65° may contain more organic impurity than the water of the plains, and yet bear the test of "keeping" better than the latter at a temperature of 90°. The effects of elevation and temperature must always be considered in judging of a water by the rough and ready method of standing it aside for a time.

But there is a much more important test of the quality of drinking waters than any the chemist or the sanitarian can give us, and the test I allude to is a physiological one. It seems to me in these days, when every man thinks himself more or less qualified to comprehend the truths of Sanitary Science, that there is a great danger of overlooking the obvious fact, that the best proof of the wholesomeness of a water must be the general condition of health of the people who drink it.

The Madras Fort water supply has recently been condemned, on what appears to be doubtful evidence of its unfitness. A Committee in reporting to Government on the subject made the following statement:—

> "The waters of all the wells within the compound of the so called seven-wells (real number ten) are unfit for internal use." * * *
>
> "The total impurities contained in these waters vary from 23·10 grains to 70·10 grains in the gallon, while those of an organic nature vary from grains 3·90 to grains 7·85 in the gallon."
>
> "Taking into consideration the fact that in the salubrious climate of England, no waters are considered even passable for internal use, which contain a greater quantity of organic impurities than two grains in the gallon; the Committee has no hesitation in pronouncing its verdict of unfitness."

It might have been supposed that before condemning a water which has supplied the troops and shipping of Madras for very many years, that some enquiry would have been made as to the prevalence or absence of diseases usually traceable to bad water, but so far as the report of the Committee shows, the sole reason for reporting upon the unfitness of the water for internal use, was the questionable hypothesis that "no water containing more than two grains per gallon of organic matter" is "even passable!"

The records of the Medical Department of the Madras Army, so far as I am acquainted with them, do not bear out the idea that the Fort water, highly impure as it is according to our notions of the present day, has ever been productive of disease. On several occasions I have known epidemic cholera to rage in the neighbouring town and bazaars with extreme virulence, and the European troops, drinking the much-abused "Seven Wells" water to maintain an absolute immunity therefrom. Cholera has prevailed in the Fort on two occasions within the last ten years, but in both instances it was introduced by the arrival of troops from infected localities.

Diarrhœa and dysentery do not specially prevail amongst the troops or other residents in the Fort. The only class of affections which predominate in Madras above the average of other military stations, are those of venereal origin. The most "advanced" sanitarians can scarcely be prepared to state that these affections result from the use of impure water. The physiological test, in point of fact, affords literally no evidence in support of the view, that a few grains of common salt and a rather high proportion of organic matter, are injurious to the health of those who drink the water.

This brings me back to the point which I desire especially to notice, with reference to water supply, namely, that in learning all that we can of the chemical composition of a water, its physiological properties should at the same time be carefully noted. I am aware of an instance of a by no means impure water—so far as chemistry sheds any light upon it—being the source of guinea worm, in those who use it. Chemical analysis in such cases affords no useful information. The physiological test and the knowledge which it conveys is our only safeguard. The natives of India, according to my experience of them, are not bad judges of the wholesomeness of a water. They recognize the fact that certain waters produce sickness, and that others are destitute of injurious properties. As a rule they prefer well waters, or the water of deep tanks in which oxygen yielding plants abound, and avoid resorting to flowing streams.

There can be no doubt that the percolation of water through soil deprives it, in a great measure, of organic impurities suspended or dissolved, and that on this account well water in India is more to be depended upon for wholesomeness than that of rivers or canals. Open tanks are always liable to surface pollution, though they have otherwise some advantages in exposure to sunlight, and contact with a large and constantly changing surface of atmospheric oxygen. The safest plan in a strange district is to drink the water that the inhabitants recommend. The physiological test generally enables them to chose safely, and it is more than doubtful whether the most careful chemical analysis of a water would lead them practically to do any better.

It cannot, however, be gainsayed that if it is possible to subject drinking water to some simple process, whereby it becomes deprived of all organic impurities, and receives no objectionable ingredient in return, every effort should be made to secure this desirable object, and especially in times and seasons, when water impurity may be a suspected source of disease. Mr. Condy's fluid appears to me to hold out a reasonable prospect of our being able to ensure absolute purity of drinking water, so far as organic matter is concerned.

For barracks and hospitals the permanganate solution should be added to the water in the required proportion, and the mixture kept in a reservoir for a few days, when it should be drawn through a filter to separate the peroxide of manganese. For ship board use, from a tea spoonful to half a wine glassful of the fluid to each hogshead, would preserve the water sweet and pure throughout the longest voyage. Travellers in India, by carrying about with them a small phial of Condy's fluid, may always ensure water that is safe to use. An addition of four or five drops of the fluid to a gallon of water, in most cases, will be sufficient to destroy any immediately injurious organic impurity in the water. Water so purified may be drawn through a syphon pocket filter, and, if necessary, any quantity not immediately wanted for use may be preserved in corked bottles. The trouble and expense of purifying a sufficient quantity of water for drinking purposes by this method is so insignificant, that no European resident in India need complain of the difficulty of securing a wholesome potable water. In private houses the ordinary chatty filter of sand and charcoal may be used for separating the deposit of peroxide of manganese from the purified water.

ART. VI.—*Report upon the epidemic of Bilious Relapsing Fever in Bangalore in* 1865. *Its Etiology, Nature, Course, Pathology and Treatment, with Observations and Cases.*

By THOS. LOWE, Esq., Brevet Surgeon, Madras Sappers and Miners.

Etiology.—Prior to the manifestation of this fever in Bangalore in its epidemic form, which commenced so far back as April 1865, there had been several cases of cholera, hooping cough, small-pox and chicken pox, acute parotitis and aphthæ, all accompanied by low fever, amongst the Sappers and Miners.

Many of the cases of small-pox, parotitis, aphthæ and cholera were contemporaneous with the cases of adynamic bilious relapsing fever under consideration.

That the presence of these zymotic diseases in a station like Bangalore, which has hitherto enjoyed an enviable reputation for salubrity, is owing to *local* causes, will, I believe, be made apparent.

It is true, so far as the Sappers and Miners were concerned, that the attacks of cholera which preceded and accompanied this fever were sporadic only, nevertheless they *were* cholera of a severe type, and this is sufficient to show that influences of a malignant nature have existed for some time past in this station. The same remark applies for the solitary fatal case of diphtheria and the allied diseases above named.* Of the local causes, the following appear to me sufficient to account for the presence of these diseases; ill-arranged and badly kept dwellings, bad water, bad air, and peculiar atmospheric states.

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* I am informed by Deputy Inspector General of Hospitals W. Mackenzie, C.B., A.M., and M.D., that one case of diphtheria occurred in 1864.

Houses.—In the *lower* and *lowest* levels of the city, the streets and houses exist without arrangement or consideration of the prevailing winds; many houses, huts and hovels in these sites are toppling upon one another, void of ventilation or possibility of ventilation. Around these ill-arranged dwellings there exists a greater or less accumulation of filth and noisome effluvia, from the inevitable results of the constant application of damp, heat, and decomposition, the emanations from these sources being carried by the prevailing monsoon along the valleys, especially along the one in which the *great drain* runs, which, again, forms a pregnant focus of zymotic poisoning.

Water.—The principal chain of tanks which collect the surface-water lies in the main drain valley; the principal wells also are sunk in this valley; and from these tanks and wells the inhabitants obtain their chief supply of water. The last great source being the *Ulsoor* tank, a large sheet of water with shelving banks covered with rank vegetation, —stagnant water along the margins of which deadly combinations are incessantly forming.

In the majority of the tanks of Bangalore the natives wash their bodies and clothing, horses water in them, and pollution daily occurs in this water, carried hence for drinking and cooking purposes. A few feet from two large wells are *two old burial grounds.* Around most of the wells there exists a constant puddle, which at times becomes very offensive. The whole of the tank water in Bangalore is essentially *marsh*-water; the edges of these tanks are extensive foci of miasms, and water is a great absorbent of malaria.

I have examined carefully, by microscope, the water of many wells and that of the tanks, and I found all of it more or less impregnated with organic matter,—algæ and infusoria, —and in some instances so crowded with animal life, that the bare eye was sufficient to distinguish myriads. The water from the various tanks was the worst, and quite unfit for human consumption.

Air.—But that it does not depend upon the water *only*, I may mention that one of the severest of these attacks occurred in the house of an officer wherein scrupulous care is taken with the water. The house in which this case occurred is close to the miasmatous border of the Ulsoor tank, and was subjected to a continuous nuisance from the ordure pits of a neighbour's establishment.

A second case which proved fatal, occurred in the family of the Serjeant Major of the corps, whose house is also subjected to malarious influences.

Atmospheric Influences.—The heat which prevailed from the month of February to the month of June, accompanied by a highly electric condition of the air, followed by heavy dews and cold nights, were, in my opinion, great *exciting causes* of this fever.* Such meteorological agencies are sufficient to give great impetus to vegeto-animal exhalations which exist here in abundance, while it is well known they induce an indescribable *malaise* in the system. The dry heat carries the water away from the lungs too rapidly, while the electricity of the air reduces the nervous force, leaving a feeling as though the body had been beaten all over and an attack of fever were incubating; such were my own feelings, and the same was experienced by others.

I find it customary amongst the poorer classes to store their ordure and household filth in a small pit hard by their doors, until they have accumulated a sufficiency for sale to the cultivators: this store remains open for months before it is disposed of, when a fresh process of stirring is commenced, so that a source of atmospheric pollution is *ever* present.

Now, considering the quantity of animal and vegetable refuse daily accumulating in a large city and exposed to a tropical sun, the stagnant state of the water in these half-dried up tanks, the bad condition of most of the public well-water, the peculiar electric state of the air during the season of heat, I think we need be at no loss to account for the generation of zymotic elements of disease and the special *typhoid* character assumed.

A grave error, in my humble opinion, has been committed in selecting encampments on the lower level of the great valley, and in permitting ill-arranged crowded bazaars, huts, and hovels, to be established around and close to these military sites; and I fear unless a better source of water-supply and a more efficient regulation for deporting filth be instituted than now exists, Bangalore will, ere long, lose the good reputation it has hitherto been famous for as a station for European troops.

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* In no part of India, save in Central India, do I remember such a highly electric condition of the air.

Nature of the Epidemic.—I have pointed out the sources of malaria in Bangalore. Before I had made the nature of this epidemic a subject of investigation and study, I was inclined to look upon it as a severe form of bilious remittent fever, resembling *yellow* fever, and it continued to present many of the features of this fever, but a closer attention to every case convinced me that it was not simply an epidemic of the common bilious remittent fever, although nearly allied to it. There can be no doubt these fevers, the products of malaria, have many features in common, so that it often becomes a matter of difficulty to define exactly the nature of a fever.

I believe they all originate in the *same* morbific agents, they certainly possess features of *relationship* that are very striking, and this will be appreciated by referring to the differential characters of remittent fever, malarious yellow fever, relapsing or recurrent fever, cholera biliosa and cholera asphyxia. Experience shows us how closely severe attacks of these diseases simulate each other, and renders it doubtful that they are not all the offspring of one and the same cause applied in a more or less concentrated form to bodies which have been acted on by more or less solar-electric and other debilitating atmospheric and terrene influences.

I believe they are, and that persons predisposed by one or several of these conditions before enumerated are but little able to withstand the morbific influences by which they are surrounded, while others better circumstanced and of more vigorous constitution pass through these influences unaffected by them, or suffer only in a slight degree. In order to demonstrate the family relationship of these diseases, I have drawn up the accompanying short but leading description, which I think will tend in some measure to show that what I have adduced is not without some foundation.

Table shewing the characters and relationship of Malarious Yellow Fever, Remittent Fever, (Jungle Fever,) Recurrent or Relapsing Fever, and Cholera.

Malarious Yellow Fever, Bilious Remittent Fever.	Remittent Fever, Jungle Fever.	Recurrent or Relapsing Fever.	Cholera Biliosa. Cholera Asphyxia.
Malarious influences. Fever ardent, continued, —remission only; intense headach; precordial oppression, violent action of heart. Epigastric and hepatic pain and tenderness. Yellow eyes and skin, tongue and mouth; stupor; constant vomiting of bilious matter, some times black; constipation or purging, urine high colored, loaded with bile, not albuminous. Delirium, lethargy, coma and epistaxis and hæmorrhage from bowels; relapse not common; visceral complications; liver generally affected; sometimes critical perspiration; spleen sometimes affected. Convalescence not usually prolonged.	Malarious influence. Fever more or less severe; headache; tongue furred, yellow; daily paroxysms, and remissions of fever; sleeplessness, delirium; hepatic pain and dullness; vomiting, bilious or bloody fluids; urine high colored, not albuminous; symptoms asthenic or sthenic; wild or low delirium; prostration; coma; jaundice; odour of dead body; critical perspiration; full remission and amendment, or great prostration and slow recovery; no tendency to relapse; convalescence not prolonged; spleen mostly affected; sometimes nervous system; no special crisis.	Malarious influence. Fever severe, headache, prostration, frequent syncope. Tongue, yellow or black; constant vomiting—vomit, bile, mucus and blood; precordial oppression; violent action of the heart; great pain in the limbs; watchfulness, anxiety; stupor; delirium; coma; remission short, or absent for days, *repeated colapse, critical perspiration* and remission from 5th to 9th day, generally on the 7th; no fever for days, then *sudden relapse*, on the 12th, 14th or 16th day from first attack. Symptoms altogether more violent for days; remission again; odour of dead body; petechiæ; death apt to occur in syncope or collapse; slow convalescence; *liver* and *spleen* affected, or bowels; death may occur in a few hours from attack.	Malarial influence. Premonitory symptoms insidious. *Feverishness*, Malaise, Diarrhœa; chilliness of skin; copious fetid stools but excrementitious; then anxiety; syncope; collapse; vomiting; cold skin; burning over solar plexus; urine *now* suppressed; vomit like rice water. Then *spinal* symptoms, viz., spasms of voluntary muscles haggard or corpse like face; cold sweat; precordial oppression; burning heat of body, but cold skin; hiccup, semi-coma or clear mind; coma; death in a few hours or days. Sometimes sudden seizure, collapse, repeated syncope, cold sweats, no pulse, *no spasms, no vomiting*, corpse-like face, lies down, and dies. *Reaction* may ensue, then pains in body, weariness and sleeplessness follow; tongue yellow or black; burning heat or algide state; urine not now albuminous; hiccup; jaundice and gastric irritability. Fever marked by remissions and exacerbations, but typhoid; relapse apt to occur; fever becomes quotidian, then tertian or quartan; slow convalescence.

That the form of fever under consideration, and attacks closely allied to it, in isolated cases, are met with in India, cannot be doubted. In its *epidemic* form, presenting its *typhoid relapsing* features, it appears identical with the remittent epidemic of Burdwan and Nuddea in Bengal in 1863, and the famine fever of Great Britain of 1847-1848, and I believe it to be only a less aggravated effect of the same febrific miasm, which, when evolved from the earth or atmosphere in a more concentrated and active state, produces the disease we call cholera.

This fever presented numerous features which were essentially *typhoid*, and it ravaged that very class of people who were hard worked, ill fed, ill clad, and badly housed—the grass cutters and other poor. The year of 1864 and 1865, counting from October to October, was a very remarkable one in both hemispheres for atmospheric perturbation; these affected the crops, and provisions have risen in price, while the wages of the labourer have not risen equally. The poor, consequently, have obtained a reduced quantity, and an inferior quality of food; and I have ascertained that very many have only been able to obtain *one* meal of *animal* food, which then consisted of offal, once in eight or ten days. They are badly off for clothing; their huts are in decay and afford them insufficient shelter. Thus have been added to the morbific agents heretofore in existence, two patent elements as *predisposing* causes of disease—insufficient shelter and destitution.

Notwithstanding that this fever presented many features of yellow fever, and the common bilious remittent fever, its characteristic feature was its *relapsing* nature, hence I have designated it as an epidemic of *bilious relapsing fever.*

Course or symptoms of an attack.—This fever was often preceded by premonitory symptoms, but in some cases the attack was very sudden. The premonitory symptoms were langour, loss of appetite, general pains over the body, headache, flushed face and nausea. Immediately preceding an attack, the skin grew cold, a chilliness crept down the spine, over the loins and down the thighs; the heart and arteries beat violently, and the countenance became suffused and drunken-looking, this was followed by extreme exhaustion; the patient staggered as though under the influence of a poison; the eyes were suffused and swimming; he answered questions in an irritable manner, now and then appearing to wake up when addressed, and as he replied he sometimes staggered and fell to the ground in syncope; his breathing was distressed and laboured, he complained of nausea, precordial oppression and pain; the skin was generally burning hot, dry, and harsh; the pulse quick and bounding, and weak, rarely below 100 beats, and oftener ranging from 100 to 140 beats per minute.

There was almost invariable epigastric and hypochondriac tenderness and fulness, frequent bilious vomiting, furred tongue, bitter taste in the mouth, constipation, and high-coloured and scanty urine.

As the paroxysm advanced, respiration became more painful and laborious; the tongue became dry, yellow and wrinkled; there was intense thirst and headache; violent action of the heart and carotid arteries, increased gastric irritability; constant vomiting and inability to swallow; hallucinations of the imagination or muttering delirium; at length the patient sank into severe collapse, became semi-comatose and passed large offensive watery evacuations involuntarily in his bed; at other times the patient sank into *repeated syncope while lying in bed.*

The patient might remain in this condition 24, 36, or 48 hours with no signs of remission, at other times, some 10 or 14 hours after the attack, a profuse perspiration would break out, the pulse would fall to 100 or 96 beats per minute, and the patient would be listless and exhausted. The remission varied, sometimes it was short, at other times it lasted an hour or two, when another paroxysm more violent than the preceding would follow.

In some cases the extreme nervous prostration and collapse set in from the beginning, then the skin was cold and clammy, the face haggard or corpse-like, the voice almost gone, the pulse small, fluttering, the lips, tongue and teeth covered with black sordes, hepatic enlargement was extreme, there was *complete suppression of urine*, low muttering delirium ensued, and offensive evacuations escaped involuntarily, while an odour as of a dead body surrounded the patient. In fact such cases appeared for the time as cholera.

From the 1st to the 7th day the patient suffered severely, at one time cerebral and nervous derangement being most marked, at another, gastric, hepatic and enteric symptoms prevailed.

In the majority of the cases, constant nausea continued day and night, the vomit was invariably green bile, sometimes blood, sometimes like coffee-grounds; as a rule there was extreme and painful watchfulness, and entire absence of sleep day or night. The exacerbations generally took place in the forenoon, the remission about 3 A. M. Sometimes the exacerbations ensued at sunset and continued through the night, the remission then occurring about midday.

In one case there was neither exacerbation nor remission—low typhoid symptoms set in from the first, and coma continued for 9 hours.

About the 7th, 8th, or 10th day the patient began to mend, and this was preceded by a most *profuse critical perspiration;* sleep would not return unless induced by narcotics, and in some cases two and *three* grain doses of morphia failed to produce more than a dreamy calm.

Some of the patients suffered much from dysentery as a secondary affection; some from sub-acute peritonitis, the *peritoneal covering of the liver* appearing much implicated; tympanitis was also a distressing complication in several cases. In almost all of the cases there was marked *yellow suffusion* in the skin, and the tongue, gums, and mucous lining of the mouth was as yellow as though the patient had been masticating saffron. The evacuations were at first very offensive, grumous, tarry, or greenish, then as deeply tinged with bile as if Bichromate of Potash had been mixed up with them; on one occasion the patient passed a fetid mass like *fresh green lichen* gathered from the sides of a well.

In several cases collapse was as extreme as in Cholera in its worst form. In one case, the wife of an officer, *petechiæ covered the arms, chest and neck,* while the lips and teeth were covered with black sordes.

At first the urine was generally scanty, hot, and high coloured, of a high specific gravity, and not albuminous; then it became very copious, muddy, *loaded with bile* and highly offensive, while the most painful *dysuria* I have ever witnessed accompanied and preceded its expulsion.

In three instances the inflammation within the liver ran rapidly into suppuration, the abscess being discharged in one case through the lungs, and in two others through the bowels.

In two severe cases, there was an odour as of a dead body surrounding the patient at the crisis.

In several cases the spleen became painful and enlarged and soft; in one case there was severe epistaxis, and in another arrested uterine function, and severe ovarian complication.

In all the cases, emaciation has been rapid and extreme; recovery has been very slow; more or less organic mischief has remained in the liver, which has rendered the progress of several of the cases tedious, doubtful, and difficult.

THE CRISIS.—This occurred on the 5th, 7th, 8th or 10th day—generally on the 7th,—and was followed by a total remission of all the symptoms. This critical perspiration was so profuse and exhausting that the patient often appeared as though he had been largely bled. In one case epistaxis immediately preceded the crisis; in another severe passive hæmorrhage from the bowels; in a third passive hæmorrhage from the bowels and dysentery. After the crisis, the pulse ran down to its natural standard or below this, the tongue began to clean, the face lost its haggard look, and the patient *might* obtain some sleep at night, which, however, was the exception.

The patient would then remain in this weakened state for four or five days; when on or about the 14th day from the commencement the patient would have a sudden *relapse* in a severer form than the first. In some cases the relapse was but a febrile exacerbation continuing from 24 to 36 hours, in others the relapse would continue for four or five days, sometimes longer. In some instances the relapse was ushered in by a sudden appearance of jaundice. When the fever was again subdued, and the second critical perspiration ensued, sudden collapse of a most formidable nature came on, and in two instances carried off my patients. I may summarize the symptoms of this terrible fever, as instanced by me in some fifty cases, as follows.

A feeling of debility, restlessness, inquietude, followed by shivering and cold along the spine, around the loins and down the thighs; giddiness and weight in the head and eyes, flushed face, suffused eyes, and countenance *drunken*; tightness across the chest, laboured breathing, nausea, thirst; tongue, first covered with a creamy or yellowish fur, mouth bitter; heart in violent action, carotids beating violently; skin burning hot; urine scanty; constipation. Then great pains all over the body, epigastrium very tender, nausea, constant vomiting of bile, sometimes blood; adynæmia, anxiety, severe and repeated collapse, tongue brown, rough, thirst unquenchable; profuse and exhausting perspiration, followed again and again by burning skin;—relapse.

About the 3rd or 4th day eyes more suffused, pupils wide, conjunctiva, face and body of a deep yellow colour; patient became stupid, semi-comatose; tongue black in centre, red, cracked and inflamed at the edges, dry and shrivelled; constant nausea and vomiting; fluttering action of the heart; repeated collapse; corpse-like countenance; petechiæ over body; dyspnœa and precordial oppression alarmingly aggravated; acute gastric and hepatic pain complained of; face became pinched, the eyes sunken, hollow and fixed; the voice inaudible; the hands, cold and dank; sordes covered the lips and teeth; pulse became fleeting and intermittent; frequent sighing and yawning; repeated collapse; gritty, tarry, bloody, offensive stools were passed, and an odour of death prevailed; the sense of sight and hearing were morbidly acute, and the mind usually clear; up to this stage great emaciation had occurred; then succeeded to this terrible train of events, pains of a severe kind in the calves of the legs and soles of the feet; continued tremors and subsultus tendinum in the weak and emaciated limbs; constant strangury; distressing tormina, tenesmus, and dysentery; epistaxis; distorted and bloated features; contracted pupils; alarming sweats, muttering delirium, coldness of the extremities, fleeting intermittent pulse; coma, convulsions, death.

Favorable symptoms.—Moderate nausea and vomiting not increased. In second stage of the fever, slight yellow suffusion; stools containing liquid bilious matters; long remission; cleansing of the tongue; nervous system only slightly deranged; no relapse; heat of body not exceeding 102° Faht.

Unfavorable symptoms.—Great prostration; repeated collapse; intermittent pulse, above 100; vomiting of bile; hepatic complication; passive hæmorrhage from the bowels; strangury; involuntary escape of fæces; odour of corpse; delirium and coma; heat of body exceeding 102° Faht.

Average duration of the Fever.—In a simple uncomplicated form, unattended by more than one relapse of febrile exacerbation after complete remission, the duration of the fever, on an average, has been 9 days; in attacks in which visceral complications existed in weakly subjects and severe relapses, the average duration of the fever has been 20 days;

the nature of the convalescence has been in direct ratio to the nature of the attack and the complication it caused, but the convalescence has been very *slow* in all. I had one patient confined to bed over *twelve weeks*, who is still suffering from debility and the visceral disease induced.

Pathology.—In the attacks of this fever a period of latency was generally to be observed or traced, in which the poison has been exerting its influence on the system; sometimes this period was very short; at others it could be estimated at several days. This, I think, depended upon the inherent powers of resistance much more than on the general condition of health.

Some persons are more tolerant of toxic influences than others, their powers of resistance and accommodation are great, hence they may continue to reside for years in an unwholesome atmosphere in apparent health and unimpaired vigour, while their less vigorous neighbours are cut off.

The introduction of zymotic poisons terminates in some instances in nothing more than functional derangement; but in others they seem to display an electric affinity for special organs and tissues.

I believe the poison causing this bilious relapsing fever and its allied diseases, acts in general as a powerful paralyser on the nervous centres, through a deranged condition of the blood, and that passive or active hyperæmia of the cerebro-spinal and ganglionic system is the secondary pathological effect. The thoracic and abdominal visceral complications being the consequence of this hyperæmic condition within the nervous centres and ganglia.

I believe that the special type of fever manifested will depend upon the powers of resistance within special viscera and the potency of the toxic agent applied; certain modifications arising from the special electric and terrene influences present at the time—the adynamic, algide, or typhoid symptoms coincident being the measure of the toxic influence upon the blood and the derangement set up by it within the cerebro-spinal and ganglionic system.

At one time bilious symptoms preponderate, at another the poison appears to have elected the spleen; at another to have well nigh paralysed the whole nervous system,—especially the nerve centres of organic life, when visceral engorgements ensue, and enteric symptoms prevail, as diarrhœa, dysentery, passive hæmorrhages, and ascites. In several instances in this epidemic the gastric symptoms were so severe as to leave no doubt of morbid changes taking place in the mucous membrane of the stomach and duodenum; and, again, the accession of dysentery left no doubt of a similar condition existing in the colon and rectum. Indeed, the severe and continued prostration, the expulsion of grumous fetid matters, tympanitis, and great abdominal tenderness, were sufficient to shew that excessive congestion had proceeded to exhausting exudation from the intestinal capillaries; constipation, then diarrhœa, and passive hæmorrhage from the bowels are frequent marked effects of derangement of the cerebro-spinal and ganglionic systems.

The relative frequency of the secondary affections in this fever may be thus stated—(1) hepatic disorder, (2) jaundice, (3) dysentery, (4) splenic disorder, (5) peritonitis : hepatic affection being the most frequent, coupled with grave typhoid (nervous) condition of the system.

In my own charge there is a body of men existing the same, as to drill and engineering works, clothing, meat and drink, and exposed to exactly the same causes of disease, of whom many are seized with this bilious relapsing fever, others with quotidian or tertian fever, some with small-pox, others with parotitis or aphthæ, others with cholera ;—and the conclusion I cannot help drawing is, that the *same* causes have originated and developed these various, but closely allied diseases.

I shall dwell further on this part of the subject hereafter, as I consider this an important position to assume and one that deserves far fuller treatment than I can possibly accord to it in a report of this nature.

Treatment.—I should not attempt to dilate upon the method of treatment adopted in this epidemic, had it been an ordinary routine practice, as fevers are generally dealt with now-a-days ; but since I was compelled by the nature of the cases to pursue another line of procedure totally at variance with that which is inculcated in the most recent work on the practice of medicine,* I feel I ought to state fully what I have done, and my reason for departing so widely from the course laid down as a guide to the treatment of a fever epidemic in India and other tropical climates.

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* Professor Aitkins's Scien. and Pract. of Med. Art. Remittent Fever.

In the early stage of the disease, that is between the 1st and 4th day of the attack, the symptoms of anxiety, prostration, and oppression were such as might well deter one in adopting what are called depletory measures, and point to a reliance on antiperiodics and stimulants alone, or to the now-often practised plan of doing nothing.

But my experience proved that it was during this period, if at all, our measures should be employed boldly and decisively according to the urgency of the case, as indicated by the degree of nervous disorder, and gastric, hepatic, and enteric complications. This time was the most precious; in the last stage of the disease, when the patient was, as it were, in the "valley of the shadow of death," we became almost helpless spectators, merely ministering to symptoms as they arose.

Depletion.—As in almost every case under my care, more or less visceral disorder presented itself, I had recourse to *early local depletion;* leeches or the cupping glasses were placed over the gastric and hepatic regions, followed by blisters, and the depletion thus effected, notwithstanding the debility and prostration, was followed invariably by speedy relief of precordial oppression and dyspnœa, gastric pain and irritation, and of hepatic engorgement and pain; contemporaneous with this, the cerebral and cardiac disturbance was suppressed, the swimming in the head, and drunken expression of countenance vanished; to aid the depletion, the head was kept constantly wet with cold evaporating lotions, and the feet and legs warm with hot-bottles and blankets.

Purgatives.—With the view of unloading the intestinal canal and liver of their vitiated secretions, and of establishing an evacuation of the poison which the skin refused utterly, at this period, to eliminate, I administered a warm aloetic purgative draught, followed by a diaphoretic at mid-day. The effect thus far was frequently a degree of remission with a softening of the skin. Then I exhibited from five to ten grains of calomel with three to five grains of James' powder at bed-time, to be followed the next morning by the aloetic purgative draught; the invariable effect of this was a copious discharge of very offensive grumous stools of various colours, from tarry black to dirty green, and these evacuations left the patient much relieved. The symptoms of collapse and typhoid condition were met at the *same time* by the frequent exhibition of beef-tea, and draughts of diffusible stumuli every hour, or oftener, as the symptoms required. The gastric irritation or inflammation was further allayed, after depletion, by the constant administration of alkaline draughts containing Prussic acid,) in from 5 to 10 drop doses), laudanum, chloroform, or creasote, and by the combined effects of *laudanum stupes* to the *nape of the neck* and pit of the stomach, sinapisms and hot turpentine foti to the abdomen; I sometimes found it necessary to restrain the gastric and enteric irritation by clysters containing from 1 to 2 drachms of laudanum. The dysuria and strangury were benefited by hyoscyamus and camphor suppositories.

Antiphlogistics thus used, locally and generally, I believe effect good by subduing a condition of congestion and irritation of the *great ganglia* induced and kept up by the original poison and metamorphic accumulation which the capillary system cannot eliminate. In tetanus, induced by miasm, I have employed no other remedies than antiphlogistics with success.*

Quinine.—The experience of the late epidemic has confirmed an opinion I have long formed regarding quinine, viz., *that until some definite impression is made upon the system by means calculated to relieve visceral disorders (when these exist) quinine is of no value, but productive of harm.* I feel convinced I have on more than one occasion unwittingly converted a case of active hyperæmia of the liver, under similar conditions, into one of acute inflammation of this organ, *by the untimely exhibition of quinine.*

In this epidemic especially I have noticed a marked intolerance of quinine, the gastric irritability being so great that the patients positively expressed a repugnance to this drug, no matter in what form it was administered, they begged of me not to repeat the quinine, it "made them so ill." It certainly often produced vomiting to the great distress of the patient, when the stomach, up to the moment it was swallowed, had been in a state of quiescence. In cases wherein visceral derangement was not present, I found quinine well borne after the bowels have been well acted on, and bile was passing away freely. On the other hand, in severe cases in which typhoid symptoms prevailed and collapse was frequent, I found nothing but strong beef-tea, brandy, ether and ammonia sufficient. Quinine, even administered in enemata, failed to produce any amendment in the symptoms, and I feel convinced aggravated the enteric distress. In several cases I have not administered one grain of quinine until the perilous symptoms had abated ; and in many cases, even where the symptoms now appeared in no way to contra-indicate its employment, and the patient appeared to bid fair to convalescence, the administration of quinine was speedily followed by severe collapse, which again disappeared on the omission of the quinine, and the repetition of alkalis and stimuli.

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* Vide Madras Journal of Medical Science, vol. vi. Paper by the autho

After full remission I found quinine did *not* prevent a relapse. The long use of quinine before an attack (in several of the Wynaad cases already in hospital for intermittent fever) acted in no way as a prophylactic, and when administered during a remission, it neither prevented a recurrence of the paroxysms, nor did it modify them in degree.

When my patients, during a remission, were taking quinine and a relapse ensued, I omitted the quinine at once, returned to alteratives and alkalis, wine and brandy, and banished the foe. In this epidemic, quinine, in my hands, has neither proved prophylactic nor antiperiodic, but it has shewn that positive harm may attend its administration, unless the disease has been met and the current of events changed by other agents.

It appears to me that there exists between hepatic and enteric disorders in general—the results of malaria—and quinine, a peculiar antagonism which nullifies the specific action of this alkaloid upon the blood poison, while its presence induces *further* active visceral hyperæmia, and thus serves to reinduce and perpetuate the febrile condition.

I have been unwillingly obliged to abandon my faith in quinine, as the sheet-anchor whereon to rely in the treatment of malarial fevers, from the numerous stubborn facts which have forced themselves upon my observation from year to year.

I believe quinine interrupts secretion, and therefore elimination of the poison, and thus leads to further mischief in organs already engorged with blood and obstructed secretions ; and I am therefore particularly cautious now to assure myself that there is neither active hyperæmia nor a tendency to inflammatory action within the abdominal viscera, before I venture to administer this powerful alkaloid. I shall refer to this more fully by and by.

Mercury.—Much has been written against the administration of mercury of late, and, if we are to believe some anti-mercurialists, not one grain of mercury should be given in this disease; that by giving mercury we are adding another poison (?) which will "act as a powerful ally of the first."*

I am not aware that there is any evidence that mercury administered judiciously is more a poison than antimony, opium, or prussic acid, nor can I understand how it will act as a "powerful ally" of malaria when used with caution.

Where this disease, or any other as Dr. Habershon has observed, has been blindly "smothered out by mercury," there the patient also would probably be extinguished, but might not the same event occur from any drug given in smothering doses?

It may have fallen to my lot to have witnessed cases in this epidemic peculiar for their great visceral derangement, it certainly has been my fortune to witness the uselessness of quinine and the beneficial action of emulgent or purgative doses of mercury, and the action thus set up to be the first step in the chain of events which have terminated in a cure.

The *specific*, as it is called, that is the *poisonous* action of mercury is *not* required; this would lead to further adynamia; but I am convinced its gentle emulgent action is one of great importance and good.

The sudden appearance of yellowness in the eyes and skin in weakly patients is an almost fatal sign, yet I have witnessed this pass away after the secretions of the abdominal viscera had been restored by moderate doses of mercury.

In this epidemic I relied much upon the emulgent action of mercury, combined with sudorifics for the subjugation of the paroxysms and restoration of the functions of the abdominal organs, for the following reason:—The disordered condition set up by the malarial poison is *further increased by the perpetual metamorphosis of tissue going on*, and thus a poison *from within* is hourly added to the *original* cause, the result being further determination and increasing congestion from arrested secretions and excretions, and total absence of elimination.

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* Professor Maclean, in Aitken's Work.

If mercury assists in the escape of these poisons, and restores secretions by its emulgent action on the viscera, as I believe it assuredly does, I do not see on what grounds it deserves to be classed as a poison and powerful ally of malaria. If it tended further to add to visceral congestion, if it tended to obstruct secretion by its stimulant action, and to constringe systems of vessels already loaded with vitiated blood and pent-up secretions, then I should consider it played the part of an "ally" of malaria; but until such therapeutic properties be demonstrated as the effects of mercury administered judiciously with a definite object in view, I submit it would be rash to exclude such a drug or to class it as a "poison," because some Physicians may have smothered out their patients by mercury.

I repeat, several of my late patients, owe their first improvement to mercury *alone*, that many of them have not taken one grain of quinine, and that in every case the gentle emulgent and sudorific action of mercury was of the greatest benefit, and lastly, that *not one relapse has occurred in those cases in which mercury was employed and quinine excluded entirely from the treatment.*

In conclusion, touching the treatment of this fever, not the least important in the management of the cases was the nursing, the liberal use of disinfectants, and a constant supply of fresh, cool, pure air.

Nothing less than constant attention, day and night, from the beginning to the termination of the attack sufficed; and I feel certain, several cases would have terminated fatally had not my Assistant Apothecary, Mr. Greene, and Dressers Doorgiah and Parthasarathy devoted unwearying attention to these patients. They relieved each other in watching night after night, and to their kindness to my patients, and to the correct manner in which they carried out all my orders and instructions, I owe it that I record but *two* deaths. Both deaths were immediately caused by suppurative inflammation within the liver. In one case the abscess found its way into the lungs, and the patient died exhausted and suffocated; in the other case, the abscess was discharged through the bowels, and in this the patient died quietly in one of those collapses which so often occurred while the patient was lying in bed.

CASES.

The following abstract of a few cases I trust will suffice.

No. 1.

28th April 1865.—Admitted in typhoid state, chief symptoms those of acute hepatitis, jaundice, followed by coma, delirium, great emaciation.

Treatment.—Sinapism to abdomen, Mercury and James' powder, Mist. Alkali ℥i. 2ndis horis. Purgative enema, stimuli ad. lib., blister to back of neck, beef tea, when convalescing took quinine, taraxacum and gentian.

Discharged 8th June 1865.

No. 2.

17th May 1865.—Remittent fever, great dyspnœa, hepatic hyperæmia, anxiety; prostration, constipation.

Treatment.—Cupped over liver, blister, purgatives only.

Discharged 3rd June 1865.

No. 3.

8th June 1865.—Fever in typhoid state, liver greatly engorged, gall-bladder distended, tongue yellow; semi-comatose; pulse 128, weak; spleen tender; became jaundiced; constant nausea and vomiting.

Treatment.—Cupped over liver, hot foti, purgatives and diaphoretics, cupped over spleen, liver blistered. Took Nitro-Hydrochloric acid only.

Discharged 6th July 1865.

No. 4.

9th June 1865.—Remittent fever, typhoid, active congestion of liver; jaundice; dysentery.

Treatment.—Leeches to liver, Calomel and James' powder, diaphoretics; blister over liver, took Nitro-Hydrochloric acid and large doses of Ipecacuanha only.

Discharged 7th July 1865.

No. 5.

18th June 1865.—Low remittent fever, repeated collapse, became typhoid, excessive hyperæmia of liver, jaundice, constipation.

Treatment.—Aloetic purgatives, Grey powder with James' powder, alkalis, sinapism to abdomen, Nitro-Hydrochloric acid only.

Discharged 6th July 1865.

No. 6.

18th June 1865.—Admitted from the Wynaad, long subject to intermittent fever, for which he had been taking quinine for months past, took from this date a quinine mixture up to the 6th July, when he was seized in hospital with severe remittent relapsing fever, became typhoid, jaundiced; had excessive engorgement of the liver, suffered from repeated severe collapses.

Treatment.—Quinine *omitted*, blister over liver, Grey powder ter. die, aloetic purgatives and alkalis; cupped over liver; during collapses, beef tea, brandy, ether and ammonia, eventually returned to quinine.

Discharged 31st July 1865.

No. 7.

4th July 1865.—Remittent fever, became typhoid in 24 hours, liver greatly engorged, became jaundiced, repeated collapses, sleeplessness.

Treatment.—Leeches to liver, hot foti, Calomel, Jacobs' and Dovers' powder, alkalis.

13th.—Doing well, ordered quinine.

16th.—Relapse severe, *omit* quinine; Calomel, James' and Dovers' powder, alkalis, turpentine stupes to abdomen; stimuli, hepatic functions being restored, he returned to quinine and wine on the 18th.

Discharged 24th August 1865.

No. 8.

15th July 1865.—In hospital under treatment for fever from the Wynaad, to-day became suddenly typhoid, repeated collapse, jaundice, great hepatic congestion, continued thus for five days.

Treatment.—*Had been taking quinine* for a month, omitted now, ordered alkalis and stimuli; Calomel and opium alkalis, and eventually quinine again.

Discharged 4th August 1865.

No. 9.

20th July 1865.—In remittent fever, typhoid, repeated collapse, constant vomiting, tongue black.

Vespere.—In articulo mortis.

24th.—Jaundice, excessive engorgement of liver, repeated syncope, dyspnœa; vomiting bile, mucus, blood.

27th.—Passed much pus by bowels, hepatic pain and swelling reduced, still nausea, vomiting, profuse cold sweats; repeated syncope, pulseless, odour as of a dead body, large offensive grumous evácuations, dysuria, tympanitis, pulseless, exacerbation every evening, total sleeplessness, dysentery, great emaciation. Had three relapses.

Treatment.—Leeches to liver and abdomen, blisters, alkalis, diffusive stimuli, beef tea, hot bottles to body, plummers pill ter. die, turpentine foti to abdomen, Prussic acid, creasote and laudanum stupes for vomiting. *Quinine and wine*, but vomited, followed by collapse as often as given, given also in enema, aggravated the enteric symptoms. Took 3 grains of morphia at bed time. Beef tea, wine, brandy, and alkalis chiefly. Very slow convalescence.

No. 10.

17th August 1865.—In ardent fever, jaundiced, liver very painful, swollen, gall bladder distended, abdomen peculiarly burning hot.

20th.—In great collapse, anxiety, dyspnœa, liver greatly distended and painful.

21st.—Has pneumonia, profuse expectoration of bile, mixed with bloody pus. In profuse clammy perspiration, but says he is burning hot, tongue covered with thick yellowish green fur, mouth very bitter, conjunctiva brownish green.

26th.—Died exhausted and suffocated.

Treatment.—Cupped on admission over liver, calomel gr. x. stat. Diaphoretics, hot bottles to body, Quinine gr v. Pulv: Jacobi gr. iii. ter die. Alkalis, diffusive stimuli, beef-tea, wine, brandy, hot foti to chest, became moribund on the 25th August 1865.

No. 11.

22nd August 1865.—Admitted in collapse, semi-comatose, cold dry skin, drunken-looking countenance, became comatose at 4 P. M., evacuations passed in bed.

Treatment.—Blisters to neck and liver, hot bottles to body, alkaline mixture, diffusive stimuli. Midnight,—Pulse 100, warmer, semi-comatose.

23rd.—Conscious, continue medicine.

24th.—Doing well. Took Nitro Hydrochloric acid and Chyretta up to the date of discharge on the 14th September 1865.

No. 12.

In severe typhoid bilious fever, liver painful, engorged, nausea, vomiting, repeated syncope, profuse wasting perspiration, no sleep, dysuria, odour of death, large quantity of pus discharged by bowel, liver lessened, but constant vomiting continued, rapid emaciation.

Treatment.—Sinapisms to liver and bowels, hot bottles to body, alkalis, diffusible stimuli, emulgent doses of mercury, morphia at bed time, vomited quinine as often as given, caused great pain and long continued nausea and profuse cold sweats, Ammonia, Œther and Brandy, Beef-tea, &c. &c.

Died in syncope upon her bed.

It would needlessly prolong this report to abstract more cases, they all presented features more or less similar to the above, and I think these sufficient to shew the peculiarity of the cases in this Epidemic.

OBSERVATIONS.

I stated in a former part that I considered the same morbific agents had originated this Epidemic as Cholera or other fevers, and my reasons for entertaining this opinion are founded upon the following facts.

I do not mean to assert that Cholera biliosa and asphyxia, and the severer forms of fever, such as this epidemic, are *identical,* but, when the algide stages of these fevers are compared with those of cholera, especially cholera asphyxia, in which there may be neither vomiting nor purging, but mortal collapse only, it must be confessed there is a striking similarity between the symptoms, such a similitude as to impress one with their close relationship. And this becomes all the more manifest when a patient has passed through the algide stage of cholera, for we then have to treat him for *remittent or intermittent* fever, *as I had in several of the cases of cholera* which preceded *and were contemporaneous with this fever as an epidemic.* Indeed, the collapse of Cholera, and the repeated collapse in these fever cases, which in both instances preceded the reaction of the febrile paroxysm, appear to me to be a good indication of the measure of the intensity of the same poison within the body.

If we do not admit the *identity* of the morbid *causes*, then we must admit that a cause which induces intermittent and bilious relapsing fevers is present at the same time producing almost exactly the same train of symptoms.

Many cases of Cholera, I know, are not followed by any fever of re-action, but, may not this be often owing to the almost total elimination of the *materies morbi* by vomiting, perspiration, and purging, in such cases as are recoverable, and do recover without consecutive fever?

The pathological appearances are so similar in cases of severe remittent fever and cholera, that the records of the two diseases are one in character.

As in cholera, so in this fever, lately epidemic, the patient may be seized with the sudden collapse without premonitory signs, and so remain in articulo mortis for hours. But the same premonitory symptoms *are* often discernable, there is the restless anxiety and haggard face, precordial oppression, nausea, ringing and booming in the ears, indescribable malaise, the syncope, collapse, suppression of urine, subsultus tendinium, corpse-like countenance, burning heat within, cold skin, restlessness, stupor or acute consciousness, hiccup, and coma; these symptoms in both diseases ranging in every degree. In both the storm may last a few hours only, or continue for days. In both there is the same morbid condition of the great nervous ganglia, and both eventually show disturbance within the spinal system. This is more marked in cholera usually, but not in all cases. In both diseases, if the secretive power within the viscera can be maintained, reaction sets in, ardent or adynamic (typhoid) fever is the result, and this fever becomes intermittent, and lastly vanishes.

" Heidenhain, who has practiced for 28 years at Marienwerder in Western Prussia, where intermittent fever and its congeners are ripe, makes some interesting observations with respect to the relation between malarious diseases and epidemic cholera. On the occasion of cholera in 1831, intermittents ceased entirely in Marienwerder, and did not occur in the epidemic form until 1849. Even in 1844 after an inundation had subsided, and the atmosphere was poisoned with effluvia of decomposing vegetable matter, intermittents did not appear. But in 1849 with the cholera all the forms of intermittent fever returned with greater pregnancy ; in 1850 and

1851 they increased still more; and in 1852, the bad years of the cholera, they were at their maximum, but did not as in 1831 disappear with the cholera, but remained the prominent form of disease until the autumn of 1856, since which time they have diminished."*

I think the above is very strong evidence in support of the doctrine of the *unity* of the morbific agents producing cholera and the allied diseases so common in India.

Rosenthal found that the motor nerves of a frog became insensible at about 158° Faht.; at 140° Faht. excitability was set up, and continued for four or five seconds; at 122° Faht., it continued sixteen seconds; at 104° Faht. more than ten minutes, but a heat from 104° to 113° produced tetanus of twenty seconds duration; a heat from 113° to 122° Faht., produced paralysis.† Budge‡ has found the *extirpation* of the *abdominal ganglia* in rabbits caused softening of the fæcal pallets, the fæces were pulpy and covered with slimy mucus, the secretion of mucus occurring to a great extent; that the peristaltic action was increased, that the blood vessels enlarged and seemed to allow of transudation of blood through their walls, and that the liver also enlarged.

Now, if these physiological facts be put together, I think they go far to aid us in our interpretation of the pathological conditions under consideration. It is well known that long exposure to intense solar heat in the tropics is followed by increased excitability, and ultimately paralysis of the voluntary and involuntary muscles as often seen in heat-asphyxia, and I think if we allow that the ganglia of the sympathetic participate in this state of nervous exhaustion primarily by heat, or secondarily through a toxæmic condition, the viscera under their influence will, for the time being, be placed in a condition analogous to that in which nervous influence had been entirely removed by extirpation of the ganglia.

In the first degree, excitability ensues; in the second, paralysis with congestion of the viscera, liquidity of the fæces, exudation of excess of mucus, or transudation of serum from over-distended vessels.

Solar heat and its inseparable *electric phenomena* produce a blanched surface, and internal ardent heat; and if we have added to a high temperature, malaria in any form, the nutritive processes dependent on nervous influence are suspended in a greater or less degree, and abnormal retrogressive metamorphosis of tissue proceeds with alarming rapidity, every exacerbation being accompanied by further textural dissolution, excessive waste progressing without repair. The malaria has affected the constituents of the blood, and chemical compounds are formed inimical to life and foreign to the blood itself in a condition of health. The generation and development of the normal components of the blood and tissues are arrested, while the disintegration of these constituents proceeds without remission or intermission, sometimes with distinct intermission; in some cases the tendency to death is so rapid that nothing short of complete and continuous nervous paralysis can account for such a condition.

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* Year Book New Sydenham Society, 1859, page 149.

† Year Book New Sydenham Society 1860, page 47.

‡ Do. Do. Do. 1860, page 44.

We must bear in mind the almost universal presence of ferments in the air, to which M. Pasteur has especially drawn attention, and that these abound in all tropical climates and must, of necessity, do so in and about large cities far removed from the sea coast, wherein the ozone must be greatly diminished, and often altogether absent, as we know it is at times.

In India we are always surrounded by the agents of disease, which in other climates appear only to manifest themselves at intervals of time; but in the tropics, as elsewhere, the agents manifest themselves and appear at times to become intensified, especially after great *atmospheric evolutions*, —and hence it is, I believe, that diseases constantly present amongst us as *varieties*, appear at times as epidemics, and almost as distinct species.

The condition of the atmosphere, the quantity of malaria absorbed, and the vital resisting condition of the viscera, determine, I believe, the nature of the attack, and I look upon the nature of the disease as an index of the extension of the *materies morbi*, and the deterioration of the fluids affected: a leaven enters the body and will lay waste every structure before it to the very foundation in such subjects as possess but low vital resisting powers.

OBSERVATIONS ON QUININE.

I do not think I ought to conclude this report without forwarding my observations on *quinine*, as I have already stated that I no longer view it as the sheet-anchor whereon to rely in the treatment of fever.

Perhaps the remarks already submitted touching the relationship of these fevers, cholera and other diseases, would imply that I treat (or would recommend to be treated) these fevers without quinine. I certainly do not use quinine as I used to do, for the following reasons, which I must transcribe at full, lest I be mis-apprehended.

1. Is quinine a prophylactic or preventive of a recurrence of fever?

During the Central India Campaign under Sir H. Rose, in 1858, having repeatedly to bivouac in miasmatous jungles, and to afford medical aid to Engineers engaged in siege works at nights in malarious vicinities of forts, I considered it my duty to guard against fever by taking quinine regularly at bed-time, I did so for a long time, yet I contracted severe remittent fever which lasted on and off for more than a year.

In December 1859 the Agent to the Governor of Madras in Vizagapatam paid an official visit to the city of Jeypore, he was accompanied by an Engineer and another Military officer, and by a large civil establishment. These officers, with many others of the deputation, took quinine as a prophylactic, and almost all contracted severe jungle fever.

While in medical charge of the Engineer's establishment at Dowlaishweram, from 1858 to 1864, it was my practice to supply such officers and artificers as proceeded up the river Godavery with quinine, and notwithstanding that they took it in prophylactic doses, I do not know of a single officer or artizan who escaped fever.

In January 1862, a company of Madras Sappers, 100 strong, proceeded to Jeypore, they returned to Head-quarters in 1863, 40 strong; during the time they were there they were continuously and liberally treated with quinine, and from the 40 survivors who returned, 22 suffered *then* from fever, 13 having organic disease of the liver and spleen.

In 1865 forty-three Sappers arrived in Bangalore from the Wynaad, suffering from fever, quinine had been liberally prescribed for them while sick in the Wynaad, but it had not held the fever in aboyance, and of these sick, while taking quinine in my hospital, several contracted this severe bilious relapsing fever, epidemic at the time.

Two officers recently left Bangalore on a shikar expedition; they were away two months, and during this time carefully took daily prophylactic doses of quinine (now and then large doses), they both of them returned and suffered from severe intermittent fever, both of which cases yielded rapidly to treatment without quinine.

I have employed quinine in all doses from two grains to twenty-five at a dose. I have given it by the mouth, per rectum and hyperdermically. I have combined it with the mineral acids, with alkalis, with Epsom salts, and with coffee, and in simple water, or as a pill. I have administered it during a remission or intermission, immediately the symptoms abated, in half an hour, one hour, or longer intervals, and immediately before the expected attack, and, after carefully weighing the evidence of ten years' experience of its virtues in India, I cannot help concluding that *quinine is neither a prophylactic of fever nor a certain preventative of a recurrence of fever.*

2. The inadequacy of quinine as a prophylactic of fever, the uncertainty of its operation in preventing a recurrence, the dangerous visceral complications which ensue during its exhibition, the intolerance frequently manifested, the pathological condition of the nervous system it often induces, have led me to study its action carefully.

Therapeutic action.—I have found a dose, from 2—5 grains, cause increase in arterial action, and in the number of respirations per minute. A 10 grain dose depresses the nervous forces thus: during the first two hours arterial action is accelerated, there is a fulness in the head, a sense of heating and throbbing, ringing in the ears and giddiness, more or less turbulence of the heart's action, frequency of pulse, feeling of general heat, exhalted sensitiveness, then perspiration and exhaustion. From 20 to 25 grains aggravate all the above effects, there is great buzzing, ringing and booming in the head, anxiety, restlessness, and precordial oppression, mental excitement, prostration, dimness of vision, weakness of voice. dyspnœa, inability to move hand or foot, repeated syncope, cold perspiration, fainting, and a feeling of impending death. Then vomiting and purging and abdominal pains and considerable exhaustion for many hours afterwards.

3. In the *absence* of fever from 3 to 5 grains act as an *irritant*, cause nausea, vomiting, thirst, constipation or purg-

ing, fever, headache, and giddiness. If febrile symptoms with gastric irritation exist, it exasperates the fever. Increasing doses exert their powers upon the cerebro-spinal and ganglionic system of nerves, and the effects above noted, I believe, are due to an induced hyperæmic condition in these systems,—in the ganglionic system first.

In poisonous doses (which we call full cinchonism) quinine appears to act equally upon both system of nerves.

The symptoms of the action of quinine convince me, that it induces cerebral congestion, then anæmia, which is soon followed by spinal and ganglionic hyperæmia, as the cardiac turbulence, dyspnœa, hepatic and enteric symptoms, followed by the algide condition of the body, I venture to think, show.

4. In many cases of fever I found its use followed by (1) gastro-enteric irritation, (2) augmentation of nervous disorder, (3) increased febrile action, and this especially so in remittent fevers.

5. I find that wherever *visceral* disorder exists in fevers, quinine is not only inert but injurious, and that however slight the visceral complication may be, quinine requires to be administered with much caution, and I find it is contra-indicated in fevers, in which (1) there exists gastric derangement, (2) cerebral disorder, (3) hepatic or enteric complication.

I believe it to be owing to its inducing further hyperæmia of the nervous centres, that it fails in producing good effects in many cases and leads to a recurrence of fever, and that its continued use often causes irritation to pass into inflammation, and that where acute inflammatory conditions exist, such states may be converted into ulceration and gangrene.

The conclusions I have formed are that—

(a.) Quinine is not a prophylactic of fever.

(b.) In intermittent fevers without complications, quinine given during the intermissions, acts with almost uniform success.

(c.) With visceral complications it is injurious.

(d.) In uncomplicated remittent fever it is valuable.

(e.) In complicated cases it is injurious.

The general rule for exhibiting quinine should be, I think,

1. To correct the state of the primæ viæ before giving quinine.

2. To examine carefully for indications of visceral disorders, and to relieve these by local depletion, and alterative doses of mercury and other eliminants.

3. The thermometric range of the body to be daily watched. This is often of more importance than the state of the pulse, or feeling of the skin. And as a rule not to give more than ten grains for a dose; that it is better to range from two to seven grains for a dose, two grains every two hours during apyrexia, I find more certain than large doses given at longer intervals.

4. To watch for the symptoms of the specific action as we would for that of mercury, and when cerebral symptoms occur, to reduce the quantity and frequency of administration, or omit it entirely.

In the Bengal epidemic, in the Burdwan and Nuddea Districts, Dr. Elliot found quinine useless in the *early* stages, that it increased the fever, and that even in some cases where there were partial remissions and the type of the fever had become intermittent, there remained the same tendency to local determinations of blood, which must be overcome before quinine was administered; for this purpose (says Dr. Elliot) repeated blisters were the most efficacious remedies.

Dr. Donaldson, writing on the cobweb treatment of fever,* says his experience is, that quinine given during a severe paroxysm of fever, especially where there are head symptoms, not only fails in its effects, and does not retard the progress of the disease, but if given in large doses really aggravates all the symptoms, and does not tend to lengthen the succeeding intermission.

Dr. Cameron, for some four years Civil Surgeon at Seroncha, in the Nagpore territory, informs me that his experience after treating many thousands of cases of intermittent fever is—(1) that quinine is not a prophylactic, (2) that it does not prevent a return of fever, (3) that the disease may or may not be modified while quinine is given, (4) that large doses usually appeared to aggravate an attack, (5) and that he considered it a dangerous medicine when visceral complications are present.

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* Indian Lancet, April 1860.

Now, in the *remission* of a paroxysm of severe malarial fever, there is no true cessation of the febrile condition; the hitherto rapid abnormal changes *are still going on in a less degree only* in the fluids and tissues. Hence the inadequacy of quinine given during this condition, hence the rejection of the remedy until the nervous disorder is allayed.

According to Dr. Maclean,* quinine given in a full doso "*not less than fifteen grains,*" the moment remission arrives (so as to induce its poisonous action), will "arrest the paroxysm quickly, simply, and effectually," when administered *early.*

In the algide condition of remittent fever, such as Dr. Maclean states were brought to him in Hyderabad "in a semi-comatose state," quinine, with concentrated beef tea and brandy, would doubtless snatch them from impending death, as I myself have witnessed; but was this giving quinine in the *early* stage in ardent remittent fever? When so given it is doubtful to my mind, whether the *concentrated beef tea* and *brandy* had not a greater share in the resuscitation than the quinine. I could adduce many cases, exactly of this type, so snatched from impending death by strong beef tea, brandy, ammonia and æther, without one grain of quinine.

There can be no doubt quinine is valuable in asthenic diseases and constitutions, in scrofula, in cachexia following hæmorrhages, in asthenic rheumatism, erysipelas, phagedæna, and mortification,—in fact, in all diseases in which a nervous and vascular stimulant is indicated.

I doubt whether we do not lose much (in the extraction of this alkaloid from cinchona) that is equally valuable in the other constituents of bark. We cannot imitate the beautiful combinations of Nature's chemistry, and I question whether we gain therapeutically in our endeavours to decompound for the possession of this less bulky alkaloid.

I venture to think it would soon be made manifest were we to substitute *thein* for tea and coffee, that we had lost other ingredients which perhaps would be found of more importance than the less bulky alkaloid.

I am inclined to think the active *principles* of bark do *not* exist in the mere alkaloids *our* chemistry has produced, but in the *combinations* of these substances with other indispensable elements *plus* the lignia.

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* Professor Maclean quoted by Dr. Aitken. Op. cit. Art. Remittent Fever.

In Cinchona there are*

Ingredients	*Properties.*
A Volatile Aromatic Oil	Stomachic.
Tannic Acid	Peptic and Nervine.
Red Cinchona.	Stimulants.
Kinic or Quinic Acid.	
Kinovic Acid.	
The Alkalies Cinchona	
Oxides. Quinia. Arcinia.	
Yellow colouring matter	Possibly Stomachic.
Kinate of Lime	Tonic Corroborant.
Gum	Peptic.
Lignia	

Are the above constituents, minus the alkaloids, valueless? I wot not.

Berzelius considered *that* bark the most efficacious containing the most *Tannic* acid.†

I do not think we can decompound such a production as cinchona bark, and obtain its entire specific effect from a totally different artificial product, a *sulphate* or *disulphate* of *quinine* In its *natural* condition its alkaloids are neither a sulphate nor a disulphate, but they are the *tannates* and *kinates* of quinia.‡

Now, it is well known that infusion of bark will often be retained with good effects, while the disulphate of quinine cannot be tolerated, and this, I believe, is owing to the presence of those constituents, which, as a whole, rendered bark famous as a medicine, before chemistry had succeeded in extracting and changing its bitter alkaloid into *sulphate* and *disulphate* of quinine.

I may mention, in conclusion, that I have treated latterly many cases successfully mainly by the administration of *large doses of Ipecacuanha and half drachm doses of finely powdered charcoal three times a day.*§

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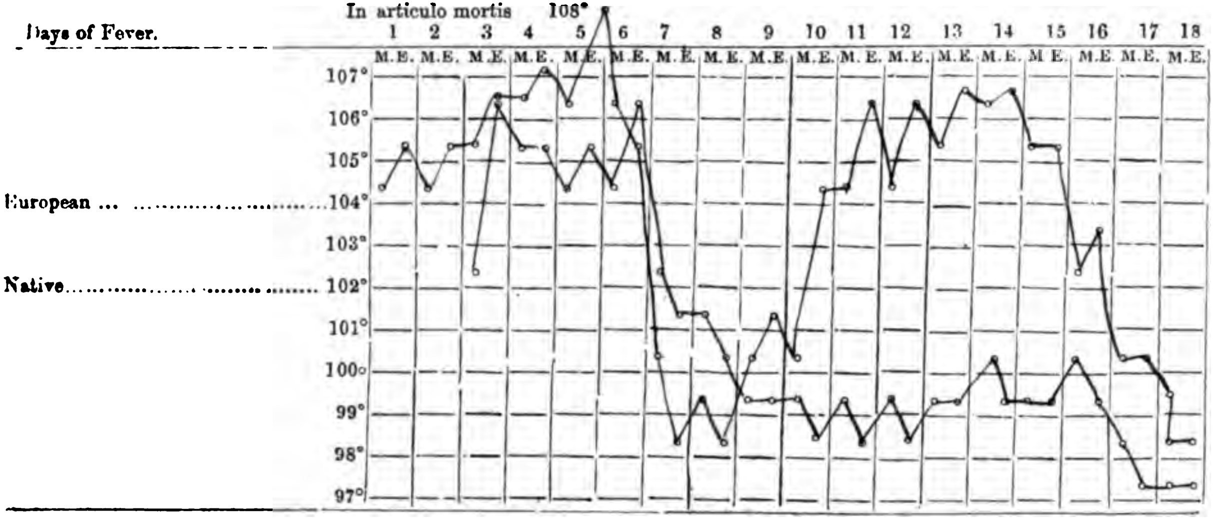
* Pereira's Materia Medica, Part ii., page 993.

† Traite de Chem, s. 587.

‡ Dr. Allison (London Medical Journal, January 1850) considered tannin a valuable peptic and nervine.

§ On referring to Thompson's London Dispensatory I find (Art. Carb Ligni.) he mentions that Dr. Calcagno, an Italian physician, proposed to employ it instead of bark in intermittents.

Table shewing the daily temperature of the body in Bilious Relapsing Fever.
Heat taken beneath tongue. Thermometer in mouth 3 minutes each time.



From a long series of thermometric observations I find the normal temperature of the Natives of India to be 97° Fahrenheit.
These two ranges show the progress of the fever in European and Native.
A heat above 102° indicated danger.

THOS. LOWE,
Brevet Surgeon.

PART II.

REVIEWS AND NOTICES OF BOOKS.

Essays and Reports on Operative and Conservative Surgery. By R. G. BUTCHER, Surgeon and Lecturer on Clinical Surgery to Mercer's Hospital, Dublin, &c., &c. Illustrated by sixty-two lithographic plates, coloured and plain; and several wood engravings. Dublin: FANNIN and Co., London: ROBERT HARDWICKE. 1865, large 8vo., pp. 933.

THERE has been a great tendency lately to the production of "big books" on Medicine, Surgery, and the allied Sciences; great, unwieldy volumes, which cannot be held in the hands with comfort, but must necessarily have the support of a table or reading-desk when under perusal. Witness Carpenter's Physiology, Human, and General; Erichsen's, Miller's and Pirrie's Surgery; Aitken's and Tanner's Medicine, &c. We think the old system of publication, in two or more moderate-sized and easily-handled volumes, far preferable to the monstrous one-volumed productions under notice. Of course our objections do not hold as regards dictionaries, cyclopædias, and works of general reference, but only to those books which one naturally desires to read at ease, and probably reclining in a lounging chair. Mr. Butcher's work is of the latter kind; but, nevertheless, it falls under the description given in our first sentence. Having premised so much of its size and weight, we purpose giving a slight notice of its contents.

The volume before us does credit not only to the Author, but also to the Publisher, Artist and Printer. The paper is of excellent quality, the type very clear, not "solid" but just sufficiently "leaded" to render perusal an easy, pleasant matter, even to eyes which have worked for forty years; and the lithographs are beautiful works of art. As to the author, he has, by his own hand, raised to himself a lasting monument of his ability and success as an earnest worker in the field of Practical Surgery.

We are told in the preface:—

> "The book, it is needless to observe, is not intended to represent a 'System,' or 'Theory' of Surgery. It professes simply to record some of the actual experience of one, who, commencing as a Hospital pupil at an early age, has been, for the last quarter of a century, assiduously employed in the field of Practical Surgery; and who has endeavoured to exhibit the work of a Surgeon as it presents itself at the bed-side and in the operating theatre."

The book, then, is eminently "Clinical," a style of work for which we have a great predilection. Several of the Reports are quite familiar to us, as the greater number of them have appeared at various times in the pages of the *Dublin Quarterly Journal of Medical Science.* The first that we remember to have heard of Mr. Butcher was in 1851, when he published in Vol. XII of the journal just mentioned, some cases of amputation and a description and woodcut of a new saw. This description with a few verbal alterations, has been imported into the Essay, "*on Excision of the Knee-joint,*" which occupies the first place in the book under notice, and the foundation of which appeared in the *Dublin Journal* for February 1855. Curiously enough, the letters indicating the different parts of the instrument, are retained in the text, but omitted from the lithograph copied from the original woodcut. This saw has since been modified and simplified, and a lithograph of its improved form is given. From a practical acquaintance with the instrument, we can testify to the great utility and almost universal applicability of "Butcher's Saw" as a bone-divider; the blade is so fine, and yet can be kept so rigid, that it readily cuts on a curve; the fine teeth are so beautifully set that it cannot be locked, and we have never found the necessity for the bone-forceps to follow its use. Mr. Butcher cannot and apparently does not claim strict originality for the instrument; it is a modification of the bow-saw used by cabinet-makers, and so dexterously handled by Chinese carpenters.

This Essay on *Excision of the Knee-joint* affords a complete history of the operation. The merit of proposing and of first publishing a successful case is given to Mr. H. Park, of Liverpool, who recounted in 1782 the particulars of a case most successfully operated on in the previous year. After this had been made public, Mr. Filkin, of Northwich, claimed priority, having excised the knee of a man in 1762, which man was living after the date of publication of Mr. Park's pamphlet. But the details given by Mr. Filkin's son, after his father's death, do not afford any evidence as to the usefulness of the limb in progression.

Mr. Butcher collects all the published cases into two groups. The first comprises those from Filkin's operation "up to the period of its abandonment after Mr. Syme's failure in 1830," to which, he adds "an unhappy catalogue" of operations by foreign Surgeons from 1832 to 1849.

The first half of this table comprises thirteen cases with seven deaths; and of the six "recoveries," it is stated that two had "useless limbs." A very unsatisfactory result, but the deaths were not all due to the operation; one was from dysentery, one from tetanus, and in one of Sir P. Crampton's cases, which was fatal, he acknowledged that the operation was not applicable. Mr. Butcher, who seems to take special delight in falling foul of Mr. Syme, says that he thinks it

> "very questionable how far the fatal result in his (Mr. Syme's) second case should be ascribed to the operation of excision. The surgery of the case is imperfect and bad; for *after* the operation the limb was not placed in proper position, and the child was subjected to additional violence in eleven days after the first operation."

The second half of the table offers still more unsatisfactory results. It comprises eighteen cases with ten deaths, five recoveries, one subsequent amputation with recovery, one deformed limb (entered as a recovery), and one unaccounted for. So that we do not wonder at Mr. Butcher calling it "an unhappy catalogue." Of these eighteen operations, six were by Textor, with one complete recovery and one recovery after amputation; four by Fricke, with two recoveries, one with deformed limb; three by Demme, with one recovery, one unaccounted for; three by Heusser, with two recoveries; one by Lang, and one by Heyfelder, both died.

The second group of cases comprises those which were operated on from 1850, when Sir W. Fergusson revived the operation, until the end of 1854. Mr. Butcher gives a short summary of each case. The total number is thirty-one, with five deaths, eighteen cured, six rapidly recovering,* one under treatment, and one "encouraging." Of the five deaths, there was one from operation, one from epidemic dysentery, one from pyæmia, one from obstinate diarrhœa, and one from phthisis (operation warranted to relieve agony). Of the eighteen cures, sixteen are said to have "perfect use of the limb."

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* We are subsequently told that of these six cases, one underwent amputation and recovered, and the other five recovered with perfect use of the limb.

Mr. Butcher furnishes a second essay on the same subject, with summaries of all the cases operated on between December 1854 and December 1856. In this third table he introduces eight cases operated on in 1854, and omitted from the previous table.

The table contains a total of fifty-one cases, with ten deaths (one after amputation); sixteen cured; six recovered after amputation; one relieved; one in a precarious state; eleven recovering (in two union delayed); five under treatment; and one unaccounted for.

In the second table there is entered one successful case by Mr. Butcher; besides this, he gives details of four other excisions of the knee which he has himself performed, three with the most gratifying results, and the fourth fatal. In this case, six weeks after the operation the limb was solid, rigid and straight as an arrow, and the man progressed well for other six weeks, when unhealthy erysipelatous inflammation, with prostrating fever, set in, and the man sunk blood-poisoned.

Mr. Butcher believes he has collected all the cases operated on by British Surgeons; if there are any omissions it is not his fault, he has faithfully given the results of all the cases on record, or of which he could gain information by enquiry. Excluding the "unhappy catalogue" and the other cases by foreign Surgeons, which find a place in his first table, we have the following general results of all the known operations performed in the United Kingdom.

Total number of excisions of the knee-joint recorded by British Surgeons to December 1856	93
Perfect primary cures with good useful limb	39
Recovering rapidly (at time of report) with every prospect of good useful limb	14
Recovering, but union between the bones delayed ...	2
Recovering, under treatment at time of report ...	6
Reported to be "encouraging"	1
Failure of excision, but recovery after amputation ...	7
Recovery with *useless* limb	2

Relieved, partial excision	1
In a precarious state (at time of report)	1
Unaccounted for	1
Died (Dysentery 2, Diarrhœa 1, Phthisis 1, Organic Disease 1,)	19
Total of Cases...	93

Admitting the cases with delayed union, those under treatment, and the encouraging one, as successes, we have a total of 62 cures to 31 failures; and if we eliminate the seven cases in which the operation of excision proved no hindrance to ultimate recovery after amputation, we may calculate a still higher proportion. Surely this is sufficiently encouraging to render it imperative on the Surgeon to resort to the operation in preference to amputation, *in suitable cases.*

We should not be doing Mr. Butcher justice if we did not mention that he lays great stress on proper selection of cases. No doubt, a great part of his own success (4 successes to 1 failure) has been due to the careful manner in which he has at once adjusted the limb, and the very judicious after-treatment which he has pursued, and on the importance of which he writes most earnestly.

The next essay is on *Excision of the Elbow and Wrist-joints.* Excision of the elbow has been so repeatedly performed with such marked success, that we may here dismiss it as an acknowledged operation of conservative Surgery. We extract the following hint:—

> " *New operation for bony anchylosis at the elbow-joint.*—I have frequently performed the following operation on the dead body, and a dexterous hand may readily accomplish it in the living. The arm being placed in the same position as that for resection, an incision should be made, about an inch in length, behind the internal condyle, and the ulnar nerve freed from its bed, and drawn forwards with a blunt hook; a second incision should pass outwards to the most prominent part of the external condyle, at right angles with the first, dividing the integuments and ligamentous expansion covering the olecranon. The fine blade of the saw which I use for resection being detached, it should be passed from the extremity of the transverse incision—that is, from without inwards, in front of the condyles and the joint, its flat surface being applied to them: the blade, being sharp at the point, can be readily made to pass along this direction, and by drawing the integuments a little in front of the internal condyle it will appear through the perpendicular incision, or that made in the first instance; the serrated edge may then be turned

backwards, the blade connected with its frame, a few movements will sever all resisting parts from before backward, corresponding to the line of the transverse incision through the soft parts ; the limb should then be bent at less than a right angle, and any vessels requiring ligatures must be secured. The after-treatment should be exactly in accordance with the rules laid down when speaking of resection. An operation accomplished after this plan is not, I conceive, nearly so serious a measure as excision of the joint; the brachial artery need not be considered in danger, except through undue rashness, and the hopes of a more perfect motion may rationally be expected when no muscular attachments are divided."

In performing the operation of excision of the wrist-joint, Mr. Butcher appears to prefer a semi-circular incision on the dorsum of the joint dividing the extensor tendons. He briefly relates a case in which Mr. John Simon removed all the carpal bones (except the trapezium and pisiform) and one of the metacarpal bones, by means of two longitudinal incisions passing between the tendons, one on the dorsal and the other on the plantar aspect. This operation was witnessed and the after-treatment watched by the present writer, and there was no unusual difficulty in the case, which ultimately did well. Certainly it seems desirable that the tendons should be as little interfered with as possible. We lately saw in one of the Medical Journals reports of some very successful excisions of the wrist, performed by Mr. Lister by means of incisions along the radial and lunar borders of the hand ; but we regret to say that our memory does not serve us as to the Journal in which the reports appeared.

Of course it is not our purpose to follow Mr. Butcher, essay by essay, through his book. His cases of excision of both the upper and lower jaw are very successful, and a perusal of them can leave but one impression, viz., that Mr. Butcher is as bold in conceiving as he is skilful in executing. Some of the most successful of our author's operations are for hare-lip. In some most unpromising cases he has produced the happiest results. His own descriptions must be read to appreciate the masterly way in which he deals with difficulties. We think that a great part of his success is due to the fact that he freely separates the lip and cheek from their attachments to the maxilla, and thus permits the parts coming together without any dragging on them.

There is one case to which we would especially refer, as a great number of our readers must have ample opportunity of putting the operation to the test of an enlarged experience. We allude to ligaturing the main artery of the limb for the cure of Elephantiasis Arabum, a proceeding first devised by Professor Carnochan of New York. Mr. Carnochan's paper we have not seen, and the first we heard of the operation was on the perusal of Mr. Butcher's report in the *Dublin Quarterly Journal* for May 1863. In that report Mr. Butcher states that, in the only case in which he has operated, sufficient time (18 months) had not elapsed to judge of the ultimate permanence of the cure; but in the work under review, he is enabled to state that the cure is fully established, for four years after the operation he "showed the patient at the hospital, perfectly cured, and able to follow her severe occupation (that of a laundress) without interruption." The case was just one of those that may be seen by dozens every day in the streets of Madras. The patient was a female, aged forty-four years, and she had suffered from elephantiasis of the right lower extremity for eighteen years. There is a lithograph of the patient showing very characteristically the deformity of the limb. We much prefer the original lithograph in the *Dublin Journal,*—which gives an idea of the patient's age, and depicts a countenance indicative of long suffering,—to that which is inserted in the volume before us, which represents the patient as a young woman with quite a placid expression.

The operation was most carefully performed; the artery lay at great depth, and the vein was very enlarged and engorged with blood, and produced considerable difficulty by rolling itself over and concealing the artery. However, everything was most successfully and satisfactorily managed. Mr. Butcher gives us the measurements of the limbs before the operation, but afterwards omits any definite information of this kind, contenting himself with reporting "progressive diminution" and ultimate "perfect cure."

We are not aware whether this mode of dealing with elephantiasis of the limbs has been put in practice in India. Ever since we read the above-mentioned case we have looked with artery-tying intent upon every enormous "elephant leg" which we have seen in our daily peregrinations; but our professional position has not hitherto permitted of our performing the operation. We hope, however, it will not be very long before we are able to record in this Journal that ligature of the femoral artery has been successful in the treatment of elephantiasis cruri. From what we know of the readiness with which persons suffering from elephantiasis scroti submit themselves to ablation of the affected parts, now that they are aware of the success which has in numerous cases been achieved, we believe that a very few successful cases of ligature of the femoral artery would produce numerous applicants at our Hospitals and Dispensaries, willing to submit to the operation in the hope of being rid of the great burthens which they now literally drag along.

Perhaps restorative Surgery never had a greater triumph than that which Mr. Butcher secured in the case of Mary M'N., related at page 757 of the present volume, but first published in the *Dublin Quarterly Journal*, February 1862. The case is headed "Shocking deformity after burn; the head bound down to the shoulder; perfectly cured, with scarcely a trace of deformity, by a new operation." A lithograph shows the appearance of the girl both before and after the operation. We have not space to enter into full details; we can merely mention that the operation consists essentially in raising the cicatrix as a flap, and freely dividing the citatricial tissue from beneath upwards, carefully saving the integument from injury, until the flap can be spread out and adjusted upon such surface as it will cover; of course a large wound uncovered by flap must be left to cicatrize. Mr. Butcher believes that his mode of operative procedure is entirely new, in fact he speaks of it as that "which I claim for my name." He reports that the case in point was seven months under treatment, and that there was such successful dealing with the cicatricial tissue and such careful after-management, that at the end of seventeen months after operation, there had been no disposition whatever to a recurrence of deformity. We think a little more time must elapse before the girl can be said to be perfectly cured, for at the time of report but ten months had passed since discharge from hospital, which cannot be considered a sufficient period to allow of a positive assurance that none of the secondary contraction which is usual in a newly-formed cicatrix will occur.

Mr. Holmes Coote says in the third volume of Holmes's *System of Surgery*, writing of contracted cicatrices from burns:—

> "Surgical ingenuity has been pushed to the uttermost to devise operations by which this distressing calamity may be removed;

> but I express the opinion of most Surgeons of experience of the present day, in affirming that hitherto all such operations have proved failures; and for this simple reason, that whenever an incision is made, a new cicatrix must be formed, and this new cicatrix will undergo precisely the same process of contraction as the former, which it was intended to alleviate.
>
> "It may be laid down as a rule almost without exception, *that a cicatrix should never be touched with the knife.* And we find that these operations have for some time past been discarded as useless at St. Bartholomew's and some other leading Hospitals of London."

It is scarcely necessary to say that Mr. Coote recommends persevering, unremitting, gentle traction, so as to gradually extend the cicatrix. We doubt if Mr. Coote had read Mr. Butcher's cases at the time his article was written.

We have already said that we think so highly of the work before us, as to look upon it as a monument to Mr. Butcher's ability as a scientific and practical Surgeon. The book deserves to rank among the standard works on Surgery. But we think it a great pity that writings which may stand for all time should be marred by controversial pettiness. We have noticed, when upon the subject of excision of the knee-joint, Mr. Butcher's tendency to fall foul of Mr. Syme; this is still more manifest in an otherwise admirable essay on *Treatment of Fractures of the Thigh-bone.* We do not mean to say that Mr. Syme's own writings are at all clear of very objectionable sneers at the practice or capacity of his brother Surgeons, but we challenge contradiction when we affirm that these are blots in Mr. Syme's essays. "Tit for tat" may be very "fair play," but we would ask Mr. Butcher whether it would not have been more dignified in him to have stated his own views and practice, and even to have met objections, without descending to the petty criticisms which mar this great work.

It is not only Mr. Syme who is made to feel the weight of Mr. Butcher's hand. We extract the following from page 160:—

> "Before proceeding with the history of the case, I must say a few words about this very valuable saw which holds my name, and is used by me in all resections and amputations. In a work recently published, entitled *A System of Surgery, Theoretical and Practical, in Treatises by Various Authors,* I find allusion made to this most useful instrument, in a feeble, meagre article, forsooth, termed 'Resection'—such a production, both in style and matter,

as would place a second year's student last in his class. I perceive a review of the book in the *Dublin Medical Press* for Feby. 18th; and I will allow the reviewer to condemn the ignorance and want of information displayed in an article which should at least yield the facts and directions laid down in every text book, and recognized by all well-educated Surgeons. The reviewer thus speaks:— 'The chapter upon *Excision of the Joints*, or, as we call it in Ireland, 'Resection,' is only remarkable for the suppression of every thing Irish that has been done in this branch of operative Surgery. Mr. Butcher, who has been particularly prominent in resection operations, has had his name introduced only for the purpose of villifying the saw recommended by him, which, says the author, 'is rather liable to bend and the blade to get loose;' though we find it difficult to understand how such can be the case if the saw be well manufactured, the blade properly screwed up, and the Surgeon have learned how to run such an instrument lightly and evenly.'—*Dublin Medical Press*, Feb. 18th, 1863, p. 170.

"The objections urged against the saw are too contemptible for me to dwell upon. Its great advantages I have pointed out in my memoirs on the subject of excisions of joints. Every modern work on Surgery, and Surgeons who have worked in this department speak loudly in its praises. By a regulation of the Army Board, it must be in every case of instruments. Is not all this additional testimony in favour of my saw? Therefore, I protest against incapacity robbing the instrument of its merits."

We do not stay to point out how thoroughly Mr. Butcher exposes himself to criticism in these paragraphs; but we must say that, in his own remarks and by adopting the opinion of the reviewer in the *Dublin Medical Press*, he does great injustice to Mr. Timothy Holmes the author of the article in the *System of Surgery*. The said article is not "forsooth, termed 'Resection,'" but *Excision of Bones and Joints*. It does not deserve the epithets feeble and meagre, though it is not, perhaps, so full and complete as it might be; and in our opinion the plea of "want of space" is scarcely admissible in such a work as Mr. Holmes has edited. But our readers will be somewhat surprised to learn that Mr. Holmes gives, in a succinct manner, directions for the performance of excision of the knee-joint very similar to those which Mr. Butcher recommends, even to the immediate final adjustment of the limb. As to the one great bone of contention, *the saw*, we extract all that Mr. Holmes says about it, when it will at once be apparent that by garbling the statement in another way the reviewer might have made it appear all in praise of the instrument, instead of "villifying" it. After remarking that "difficulties are better overcome by the dexterous use of common instruments than by the invention of special and often complicated apparatus," and that "the elaborate instruments described, usually in French surgical works," appear to be designed to enable the operator "to remove the bones piecemeal; and, if so, their principle is radically bad," Mr. Holmes goes on to say:—

> "The saw called by the name of its inventor, Mr. Butcher, will often be found useful. It is similar to the ordinary metacarpal saw, except that its blade is movable, and can be fixed at any angle, so that it can often be introduced and worked where an ordinary amputating saw cannot. The latter, however, is much better for sawing off a piece of cleanly-exposed bone; as Butcher's saw is rather liable to bend, and the blade is apt to get loose."

As to the non-reference to Mr. Butcher's resection operations, a great many other Surgeons might make a similar complaint, for Mr. Holmes mentions Mr. Fergusson merely with reference to "the lion-forceps," and the names of Page, Mackenzie, Keith, Holt, Pirrie, Statham, Price, Hey, &c., are not to be found in the article, and Dr. Humphry is only mentioned as having removed the condyle of the lower jaw, and excized a fractured portion of the patella!

The practical character and the excellence of Mr. Butcher's work is such that, we feel sure, a second edition will be called for before many years have elapsed, and we hope that, when this event arrives, a careful revision will take place, and all this objectionable matter be expunged. Surgeons will be glad to know how Mr. Butcher works and with what results, without being bored with controversies not always pertinent to the matter in hand.

Notes et Réflexions Médico-Chirurgicales sur les Phlegmasies de la Matrice. Thèse pour le Doctorat en Médecine, présentée et soutenue, le 9 *Mai*, 1866. Par Alexander Boggs, Docteur en Médecine; Membre du Collége Royal des Chirurgiens d'Angleterre; Licencié en Accouchement du même Collége; Ex-Chirurgien de l'armée Anglaise dans l'Inde. Paris, A. Parent, 1866. 4to. pp. 184.

It must give great satisfaction to the friends of Dr. Boggs, formerly an officer of the Madras Medical Establishment, to find that the same qualities which led him to seek and obtain that honorable position, have had an ulterior development, since his retirement from the service, in securing for him the degree of Doctor of Medicine of the Faculty of Paris.

An academic thesis scarcely comes legitimately under the hands of the reviewer. It is enough that it be presented and sustained to the satisfaction of the Examiners for the degree: and that it was so in this case is proved by the President of the Court, M. Tardieu, having certified of this thesis, "Vu, bon a imprimer."

There are three dedicatory pages, the first in honor of Professor Tardieu; the second in that of the Professors and Examiners of the Faculty of Medicine of Paris; and the third offers the respectful remembrances of a grateful scholar to all his former masters, the Professors of the Madras Medical College.

We have hinted that we do not purpose to criticize the work. But as Dr. Boggs has a good deal to say about India, we shall extract some of his remarks, leaving our readers to judge for themselves as to their tenableness. First, however, we must give an account of a remarkable family which our author has met with:—

"In this family all the females are subject to uterine affection, under one form or another, whilst all the males are afflicted with scrofulous maladies in all their varieties. This family, all the members of which bear the pathognomonic signs of the scrofulous diathesis, is numerous, and I have observed this disposition (to uterine affection) even in the youngest daughters. They are all subject to genital catarrh, and I have been consulted for a sero-sanguinolent discharge coming from the interior of the genital parts in a young girl of seven years. The mother is affected with a chronic metritis, which is aggravated from time to time under the influence of any cause, and the malady then presents all the characters of a fresh acute metritis with peritoneal complications. The mother of this lady, who has had seven or eight children, five of them girls, died with symptoms of peritonitis, evidently having their *point de depart* in the uterine apparatus, and the young lady, her daughter, has lost two sisters with symptoms of chronic metritis; one of these succumbed, after a sickly life of many years, literally worn out by a prolonged suppuration proceeding from the interior of the womb, and from a peri-uterine abscess opening into the vagina and rectum, constituting a recto-vaginal fistula. The other sister died in child-birth, the victim of a uterine affection. A remarkable thing is, no member of this family, to my knowledge, has been attacked in the lungs. A niece of this lady, still unmarried, was treated, at the age of twenty years, for metritis, and another niece, daughter of another sister, was attacked with a chronic affection of the uterus, following an acute metritis set up a little after her marriage, at the age of seventeen years; her mother is subject to a dartrous affection. I ought to mention that the sick members of this family have been treated by different physicians, who all agree as to the diathetic nature of the uterine affection."

Dr. Boggs, controverting the opinions expressed by Drs. Henry Bennet and Tilt, that uterine and ovarian diseases of an inflammatory character are more common and more severe in hot climates than in temperate regions, says,—

> "With the respect due to their talent, I must say that I do not deny the powerful and deleterious influence of heat upon the general organism of Europeans residing in the tropics, but I cannot see that this influence acts in a notable manner upon the womb. I believe, then, that hot climates have not any special influence, or a greater influence than temperate climates in the pathogeny of uterine diseases. God knows that these diseases are unhappily common enough in countries otherwise well favoured by nature, and as a proof, I may mention, that they have not escaped the penetrating eye of Mr. Michelet, who, judging our age somewhat rigorously, with the great soul of an artist, has surnamed it *the age of diseases of the womb.*"

Again he quotes from Dr. Tilt, who, in estimating the comparative frequence of uterine inflammation among Europeans residing in the tropics, says "it must be borne in mind that, whether in India or in our other tropical possessions, European women are all young: they leave Great Britain at about twenty, and seldom remain in India after forty, thus passing in a hot climate the period of life in which uterine inflammation is most common even in temperate regions." Upon which Dr. Boggs remarks:—

"That is perfectly correct, but it pertains rather to age than to climate. We must seek elsewhere, then, the source and the true cause of uterine diseases in India, above all inflammatory diseases, and we shall find that there, as here, an attack of acute metritis is generally preceded by a chronic affection of the womb. Moreover, all that is applicable to uterine diseases in hot countries is equally so as regards the same diseases in temperate climates.

"It is remarkable that the maladies attributable to such or such climate are borne upon the organs of nutrition, whilst diathetic, constitutional or hereditary diseases oftener bear upon the generative organs, such as cancer, tubercle, scrofula; and this equally in the two sexes.

"I admit with the learned physicians who have practised in India, that Europeans are very subject to uterine affections and to the disturbances of the general functions which accompany them, whether as causes or as effects of the uterine malady, but that can be explained in another manner than by the direct influence of climate upon the generative apparatus.

"Menstrual troubles, leucorrhœas, ulcerations of the neck of the womb, and chronic metritis are common enough in India, even among the Hindoos; in that country as in Europe, the women are more or less exposed to the same determinating or occasional causes; further, and although odd at first sight, experience has shown that a great portion of the diseases of tropical countries is attributable to cold, also in Europe so powerful a cause of inflammation of the womb." * * * *

"Another cause of the extraordinary frequency of uterine inflammation among European females in tropical regions is certainly found in the deteriorated state of the blood, in the various grades of anæmia which one observes among them, and in the great debility engendered by a more or less prolonged residence in a hot climate."

* * * *

"This chloro-anæmic state is found not only amongst Europeans in India, but it constitutes almost the physiological state of the natives, and this may be explained not only by the effect of the great heat and the malaria to which they are constantly exposed, but also by their food, which, composed almost exclusively of legumes, is unsubstantial; the constitution of their blood, consequently, approaches that of the blood of a chloro-anæmic subject; in other words, their blood is more serous than fibrinous, and less rich in globules, the elements containing the colouring matter of this liquid. It is to be remarked that Europeans are more subject to inflammation than natives; their food, consisting principally of meat, is more substantial; their blood is consequently richer in fibrine, the characteristic and essential element in the pathogeny of inflammations.

"We have to notice also that in natives and more especially in Brahmins, or legumists, inflammatory lesions terminate oftenest in resolution, whilst in Europeans, they almost always terminate in suppuration, and cicatrization advances less quickly in them than in natives. This is due to the food, or to a peculiar organization induced by the climate.

"It is remarkable that, whilst the blacks are equally with the whites more or less susceptible to the ruling diseases of the country, dysentery, or rather dysenteroid—a form of mild entero-colitis—and diseases of the liver by preference attack good livers. This is not surprising when one reflects upon the manner in which Europeans live in India, and especially the English, who, with little difference, live as in their native country. It is evident that that which is good in a cold climate cannot be equally good in a hot climate; the old residents know this so well that they rightly adopt the regime of the country, and live very nearly as the Brahmins, and they generally find the benefit of so doing; they enjoy not only better health than their compatriots, but, further, their system is in a better state to resist sudden and marked changes of climate on their return to their native country.

* * * *

"As I have said, a large proportion of the diseases in India, especially among Europeans, is attributable to cold; and this is explained by the habits which they adopt and by their garments which are not altogether suited to the climate and to the sudden changes of the seasons. Thus, although cold may be of a conservative nature for life in general, it becomes, under certain conditions, a powerful agent in the production of diseases. This is applicable to every climate, and one circumstance which greatly favours perturbations in the health of women, is the mode or nature of their costume, upon which I propose to say a few words under the title of:—

"*Garments.*—Fashion, the despotic queen of the civilized world, has always found submissive subjects, and women faithful to the caprices of this despot follow all the periodic changes dictated by fancy, unhappily too often to the prejudice of their own interests, and that which is above all, their health. How many women alter or destroy this precious gift of nature merely to satisfy the capricious conventionalities of society! and this is so true, that the wives even of those who are considered the guardians of the public health, form no exception. In this matter, the husband has no authority, and when he offers his advice, not upon the fashion, but in a prophylactic point of view, his entreaties are almost always repelled, and fashion alone will be scrupulously followed. Such is civilized society, not only of our age, but of every time, and if we may judge of the influence of fashion by this present time, we may conclude that she will reign paramount for ever.

"There is one part of the costume of women which enjoys much favour (*un grande rôle*) in the world, but if it is advantageous to commerce, it is not so to health, I speak of *the crinoline.*

"Can the crinoline be injurious to health? Certainly. Has it any influence in the production of metritis or other uterine maladies? This we shall endeavour to show.

"If cold has any influence in inducing diseases in general, it appears to me that we shall find here a medium, which, by its bell-shape and the nature of its structure, singularly favours the action of cold upon the body and offers no protection against the inclemencies of the season; hence these frequent perturbations of the general health of women, and diseases of the womb in particular. I speak here only of those women who do not take the precaution to combat this inconvenience by guarding their inferior members against the redoubtable action of cold.

"If the crinoline is injurious to women not in the puerperal state, we can imagine its disastrous influence upon pregnancy, a state which renders woman more than ever susceptible of all morbific causes, and above all of the action of cold. * * I have seen women religiously wear their crinoline until the appearance of the first pains of parturition! * * *

"In India also the subject of garments is not sufficiently studied in a hygienic point of view; there, as here, fashion reigns supreme, (not for the natives, who wear garments the fashion of which never changes) but for Europeans, who, with the same zeal, follow the fashion of Europe, or rather that of Paris, with some modifications necessitated by the climate. But yielding to the natural heat of the climate, the ladies are always very lightly clad, and as the heat is sometimes intolerable, they seek relief in the sea-breeze, or in the cool breezes which sometimes blow after sunset, or they even create for themselves, so to speak, a climate in their dwellings by artificial means, and they obtain a considerable reduction of the temperature.

"These means consist of agitating the air of the interior with punkahs or thermantidotes [explained in foot-notes], machines well known to European travellers in India. Joined to this, the air is rendered fresh and moist by mats of straw or grass (*vétivert*) placed at one or more doors and windows and wetted all day, sometimes all night, with fresh water. This constitutes the greatest luxury of Europeans in India, and one may say the only means of rendering life supportable during the months of the greatest heat; but if this refrigeration is considered a great luxury, it has also its inconveniences, and, in my opinion, nothing is more injurious to health, as we have seen when discussing the action of cold upon the body. I may remark here that the natives do not use these factitious means, and I believe with reason.

"Further, by an inexplicable caprice, if it is not the madness of following the European fashion, visits of ceremony are made in the day and at hours when the sun is the most ardent, without reflecting that what is feasible in one climate cannot be done with impunity in another. The truth of this fact has been more than once sadly attested. In how may cases has not the cause of a grave disorder, followed sooner or later even by death, been attributable to a chill felt, perhaps, for the first time, when paying a visit and sitting opposite to or beneath one of these wind machines, whilst the body is probably still bathed in perspiration! I can but say that I have seen many cases of uterine inflammation and even of pulmonary phthisis thus induced.

"The European inhabitants of India are always lightly clad in tissues which are more or less good conductors of heat; now physical science teaches us that a good conductor of heat is also a medium for the free passage of cold from without to within; the result is, that the body thus clad is insufficiently guarded against sudden alternations of the ardent heat of the sun on the one part, and the low temperature of the internal atmosphere of their dwellings, on the other part. But how can the natives resist the influence of the torrid heat of their country, being as they are in a state of almost complete nudity? This question presents itself naturally to the mind. Here again we must have recourse to physical science, but this time we must associate physiological anatomy with it.

"From this triple science we learn that this immunity is due to the intensity of the coloration of their skin, or rather to the more pronounced development of the Malpighian (pigmentary) layer of the membranous envelope of the body. In the white race, this coloration is confined to the Malpighian layer, whilst in the negro it extends even to the horny layer of the epidermis. Now physical science tells us again that all bodies possess more or less a power of radiation, according to the colour and the nature of their surface. By the same fact, the skin of a negro being black, this power is greater in him than in the whites; the skin of the latter, on the contrary, allows a great portion of the calorific rays easily to penetrate the tissues, even to the deeply-seated organs. In a word, the black skin is a bad, whilst the white skin is a good, conductor of heat. The result is, that the European is more susceptible of variations in the surrounding temperature, and consequently he must be more sensible of the least lowering of the heat, although always clothed.

"The *crinoline* may act also by the compression or constriction which it must necessarily exercise upon the abdomen and its contents, whether by its own weight, or as a constricting agent, thus causing a disturbance of the functions of the different viscera, and as the pelvic organs are not exempt from this vicious influence, the womb in its turn is necessarily affected in many ways, functionally and structurally, without counting the different displacements to which it may be exposed."

We have confined ourselves in our translation entirely to the section on Etiology; and our extracts have extended to a much greater length than we originally intended, for we found, as we went on, that we were not only arriving at the views of a physician who has practised in India on the cause of disease in general and of uterine affections in particular, in this land of the sun, but were also gleaning some wrinkles as to "the manners and customs of the English in the East."

These we place before our readers without a word of comment, for as we are not seated in *la chaise du critique*, our mouths are shut as to whether we agree or disagree with our author.

We heartily congratulate Dr. Boggs on the Foreign Honours he has attained, and trust that he will be permitted to enjoy and adorn them through a long, useful and prosperous life.

Surgical Experiences: the substance of Clinical Lectures. By SAMUEL SOLLY, F.R.S., Senior Surgeon to Saint Thomas's Hospital: Member of the Council, and late Professor of Anatomy and Surgery in the Royal College of Surgeons of England, etc. London: Robert Hardwicke, 192, Piccadilly. 1865, 8vo. pp. 656.

MR. Solly's book is what it professes to be, a book of *surgical experiences.* It is indeed the substance, if not the ipsissima verba, of certain clinical lectures on Surgery, delivered at St. Thomas's Hospital from 1841 to 1865, by a well known and highly esteemed London Surgeon. It does not profess to deal with novelties, but to illustrate the principles of Surgery by cases as they actually occur.

It is a book on which the Surgeon in actual practice, who can discern the difficulties and disappointments that occur in his daily career, as well as appreciate the rewards of labor and anxiety,—the triumphs of his art,—is far more likely to bestow praise and attention, than the Tyro of the profession. Works of this sort, however, are the real storehouses of our knowledge. It is from these that systematic treatises are, in a great measure, compiled, and as such, we feel sure, that Mr. Solly's book will meet with a hearty welcome from those of our readers who may be engaged in the more active practice of Surgery. It is divided into fifty-four lectures, and embraces at least thirty different subjects. It will be impossible, therefore, to do more than glance at a few of these, as a critical review of so many different subjects would occupy more space than we can devote to the volume.

The first seven lectures are devoted to Diseases of the Spine. The first lecture deals with its lateral curvatures—those distortions so prone to appear in young females of the better classes, whose health has been undermined by confinement, and whose frames are weakened and arrested in development by the usages and restrictions of civilized life, and by impaired nutrition. It deals with them, clearly and practically, pointing out their origin and causes, the principles of their treatment, and the means of prevention. In the 7th lecture the author refers to an antero-posterior curvature of the same genus and arising from the same causes;—a curve of feebleness not of disease—the aggravated stoop occasionally met with, though little noticed in surgical treatises. Mr. Solly only details one case, a child of 9 months old, regarding whom he was consulted. There was curvature of the dorsal vertebræ, indications of pain elicited by tapping on either side of the projection of the spine, and loss of power over the lower limbs, though there was no paralysis of the sphincter ani or bladder. The history and appearance of the child, the pain from pressure on the curvature, all pointed to the conclusion that there was disease of the bodies of one or more vertebræ, and that the child was doomed to be a hunchback for life. Further examination showed that the case was not one of true angular curvature, but an exaggerated stoop or curved back without carious disease of the bodies, but in all probability with a partial absorption of them. Perfect rest was enforced on the trunk and lower limbs by a mechanical contrivance which prevented the spine bending forwards, and permitted to the neck and arms only freedom of motion.

Suitable constitutional remedies and a change to the sea side were prescribed, and in the course of a few months the spine was reported perfectly straight, and the child vigorous and remarkably well. It is a known fact that the solid bony structures yield to pressure more easily than do the elastic intervertebral substances; hence the habit of stooping from the back or "round shoulders," as it is sometimes called, is more deleterious and permanent than when the habit of stooping from the loins is acquired, as the anterior edges of the bodies of the dorsal vertebræ are prone to become absorbed, which, from the greater elasticity, is not the case in the lumbar region.

The 2nd lecture treats of Angular Curvature and Caries of the bodies of the Vertebræ as ordinarily met with. In it and the two subsequent lectures the author dwells on some points of great practical importance, namely, 1—The occasional commencement of the ulcerative process in the intervertebral cartilages instead of in the cancellated bony structure of the bodies; 2—The occurrence of caries of the spine with and without the formation of matter; 3—The occasional occurrence of lateral curvature from caries of the vertebræ.

It would appear that suppuration more frequently follows caries which commences primarily in the bodies of the vertebræ than that which commences in the intervening ligamentous tissue, and this is the important point as concerns recovery; for, however much deformity or paralysis may excite pity and sympathy, it is the formation of abscesses that brings the patient to the grave.

Caries only attacks the anterior segment of the spine, for numerous though the small joints in the posterior segment be, they are scarcely ever seen in a state of caries. While that action is spreading to the bodies of the contiguous vertebræ, coagulable lymph is being deposited in the tissues that connect the vertebræ posteriorly. This in time becomes solidified and arrests motion, which favors any tendency there may be for the morbid action to subside, and for the absorption of abscesses of limited size. All Surgeons of experience in spinal disease recognise the fact that abscesses form in many cases without disclosing themselves externally. In two cases detailed by Brodie, abscess presented itself only at the end of eight years in one, and in the other, a case of dorsal caries, the time was not less than sixteen years. When we meet, therefore, with a case in which there has been no manifestation of abscess, we are not justified in concluding that one has not existed. "The inference ought rather to be," as Mr. Shaw (Holmes, vol. iii. p. 842,) remarks "that an abscess has really been formed; but that it has been held in subjection, and prevented from developing to a large size by the processes of resolution, which have eventually led to its perfect removal." What are those cases in which abscess will not develope to a large size and terminate in resolution? Brodie says, "in a case of scrofulous caries of the spine, I doubt whether the patient ever escapes abscess." The immunity from suppurations of patients suffering from *rheumatic* inflammations is as proverbial as is the tendency of the *scrofulous* inflammations to suppurate. This really seems to be the crowning point in the prognosis of such cases. If the inflammation is scrofulous, it will terminate in suppuration in the body of a vertebra, as elsewhere. If its nature be not scrofulous, the inflammation, if properly managed, will not necessarily eventuate in abscess, but may terminate in resolution.

Sir Benjamin Brodie pointed out long ago, that the bodies of as many as three vertebræ may be completely destroyed, and disease of the spine be present for many years, without matter having formed. He believed that this form of caries may be frequently referred to chronic rheumatic inflammation affecting the bones and inter-vertebral cartilage, and Mr. Solly adopts the title of *Rheumatic Caries of Brodie* for this form. Mr. Solly says :—

> "If it is important for you to distinguish between lateral curvature and angular curvature, so it is even still more important that you should distinguish between ordinary or *strumous* caries of the spine, and the *rheumatic* caries of Sir B. Brodie—for I am convinced that the two diseases are essentially different, both as regards their origin, progress, and termination, and the treatment required for their cure—and again, between the latter, and disease of the cord independent of disease of the bone. Sir Benjamin Brodie, in a lecture published in the *Lancet* of the 30th December 1843, has remarked that rheumatic caries is always accompanied with pain ; scrofulous caries, though frequently, not so invariably ; and in paraplegia from disease of the cord independent of disease of the vertebræ, there is an entire absence of pain. The history of each case will also assist you—the presence or absence of a rheumatic or of a scrofulous diathesis—the moral history of your patient, independent of disease of the cord being generally the result of excess in venery by persons leading sedentary lives and engaged in continual mental exertion. But in these last cases—and I have seen several—there is no pain on tapping the spine. But, on the other hand, there are cases of spinal disease in which the diagnosis is not so easy. The patient suffers severe pain on pressure over the spinous processes, with total loss of power of the legs, but without any irregularity of the vertebræ, or other evidence of the existence of disease of the bones. The most anomalous symptoms, however, generally occur in females ; and where we find, in our examination of these cases that there is no evidence of a rheumatic tendency previously, that they have never suffered from rheumatic pains, and that the tenderness on pressure is not confined definitively to any particular portion of the spine, severe pressure, not inflicting more pain than slight ; again, the pain shifting sometimes in one portion of the spine, sometimes in another ; and, if in addition to this, you find clear signs of a hysterical diathesis, you may generally refer such ailment to a hysterical origin." p. 48.

Lectures V. and VI. are devoted to affections of the Spine more obscure in their diagnosis and more insidious in their progress, commencing in the ligaments, sometimes induced by cold, sometimes by direct injury, such as a sprain, blow or fall. The cases are somewhat too diversified to give even an epitome of them in such a short notice as this, but they are well worthy of perusal.

Injuries of the Spine and of the Head are treated of in subsequent lectures, and will also well repay a careful perusal ; but we cannot enter upon the subject here as it is both extensive and interesting, and its full review would occupy more space than can be given to the "Surgical Experiences" altogether. We make, however, no apology for placing shortly before our readers Mr. Solly's description of the Scrivener's Palsy, or the Paralysis of Writers—a rare disease of the nervous system, not described in any English system of Medicine or Surgery that we are aware of, though referred to by several continental writers.

> "The disease, as its name implies, shows itself outwardly in a palsy of the writing powers. The muscles cease to obey the mandates of the will. It comes on very insidiously, the first indication often being only a painful feeling in the thumb or forefinger of the writing hand, accompanied with some stiffness; these unnatural sensations subsiding during the hours of rest and sleep, to return with the writer's work on the next day.
>
> "The loss of power is not sudden, as in a paralytic stroke; nor is it a complete paralysis of any group of muscles. The paralyzed scrivener, though he cannot write, can amuse himself in his garden, can shoot, and cut his meat like a Christian at the dinner table: indeed, he can do almost any thing he likes except earn his daily bread as a scribbler."

Scrivener's palsy is not a paralysis of any set of muscles, for the patient can make all his muscles act; but he cannot bring them all into such harmonious action as to be able to write. The act of writing is dependent on the co-ordination of several muscles. The cerebellum is the great co-ordinator of motion—but Schroeder Van der Kolk has shown that the spinal cord is a co-ordinator of movements of the body by its motor cells or vesicles—and Mr. Solly holds to the view that the scrivener's palsy has its seat in the spinal cord, from the facts that in most cases pain is felt in the lower part of the cervical and upper part of the dorsal regions, while there is seldom any pain complained of in the head, and "that the use of the left hand in writing instead of the right will induce uncomfortable feelings in the latter." Mr. Solly is of opinion that the disease depends on granular degeneration of some of the ganglionic cells of the spinal cord in the region of the brachial enlargement, but this opinion is as yet unsupported by post-mortem examinations of any of his own patients.

Complete rest from the occupation that has produced the disease seems the only remedy of any use.

> "Fresh bracing air—mountain air if attainable—is of more service than all the tonics in the world. As regards tonics, they must be varied

to suit the peculiarities of each constitution. Zinc, iron and quinine are the tonics on which I rely most."

This is not the only instance of a set of muscles losing their consentaniety of action by long continued over-exertion. Continental writers have recognized the sempstresses', shoemakers', milking', musicians' and compositors' cramp.

Diseases and Injuries of Joints with Disease of Bone occupy 177 pages of the volume. There is some attempt at arrangement in these lectures, but it might have been carried further with great advantage, for facility of reference; diseases of the knee joint, for instance, being the subject matter of lectures 25 and 26, and of 32 and 33, while the intervening lectures are devoted to other matter.

The subject of diseased joints is fully dealt with. Speaking of hip-joint disease, our author says:—

"I consider this lengthening—though as I have already said, it is more apparent than real—important as a diagnostic of the acute and active stage of the disease.

"It is only in this stage that I have found any local depletion of service: for as a general rule, and certainly in the more advanced stages, leeches, and other means of local blood-letting, only do harm by weakning the powers of the patient. It is in this stage that absolute rest is so important, and that calomel and opium are of real use.

"Pressure of one articulating surface against the other does not much affect the patient, unless there is ulceration of the cartilages: and therefore this manœuvre is often a means of diagnosing this additional mischief. The mere pushing the os femoris directly into the acetaculum will not always give rise to pain, even if there is ulceration: but by giving the thigh a rotation inwards, thus jerking the bone against the inner side of the cotyloid cup, you can generally detect any increase of disease beyond mere synovitis.

"After the disease has existed for some time, the rotundity of the buttock is lost, and the edge of the glutæus muscle no longer stands out in bold relief, the fissure separating the nates from the thigh almost disappears, and the line becomes more oblique. These changes all depend on the wasting of the muscles from disuse, consequent on the state of the joint admitting of but little motion.

"The patient often complains of pain in the knee, referring it to the inner side. This pain has usually been considered sympathetic, and I believe that it generally is so, but M. Bonnet * * considers 'that the pain arises from actual disease in that joint.' * *

"In the case of E. C. there was unequivocal shortening of the limb, so much so, that she required a sole to her shoe of at least four inches to enable her to walk at all evenly. Now whence this shortening? If we look at the head of the bone we find its convexity diminished: but that is all. If we look to the neck we find it very nearly the ordinary length in a female of her stature. No absorption of its exterior has taken place, the obliquity also is normal. It has not assumed the horizontal line which shortens the limb in old age. The explanation is simple and rests upon a very important law in the economy—namely, that the development of every part of the living organism which is not normally employed during growth is more or less arrested: and I feel no hesitation in saying, that if the diseased thigh-bone had been compared with its fellow on the opposite side, a considerable difference would have been discovered in the length, size and height of the two bones.

"In some cases of this disease, as you may see in one of my patients now in the hospital, the os femoris is actually dislocated and the head of the bone lies on the dorsum of the ilium. In such cases there is no doubt regarding the shortening; but there are cases in which there is apparent dislocation, and the signs of which have been so distinct in the opinion of the attending Surgeons, that they have felt no doubt on the subject, but in whom a post-mortem examination has proved that there was no displacemont whatever.

"But these observations must not lead you to suppose that, in all cases of disease of the hip joint, the shortening of the limb can be thus accounted for, or that there is a positive shortening of the lim b in all cases of this disease.

"We have already seen that one of the characteristics of *morbus coxæ* is, that the thigh is flexed upon the pelvis, so that the toe can only just reach the ground; and so far the limb is shortened. It is a point of some importance, and it is one on which much has been written, to ascertain whether the limb is really or only apparently shortened: and there are other cases in which the head and neck of the bone are removed under the action of carious absorption. Here, again, there can be no doubt the shortening is real. But in the greater number of cases the shortening is only apparent, not real. It arises from the alteration in the position of the pelvis from lateral curvature of the lumbar vertebræ; and if this curvature has not existed so long as to have become permanent, the error may be detected by placing the pelvis of the patient when in bed, at its proper right angle to the spine, and then, if the diseased joint will permit the extention of the thigh, placing the limbs parallel. If it cannot be accomplished in this way, accurate measurement from the ant: sup: spinous process of the ilium to the patella and thence to the sole of the foot under the ankle will generally decide the question."

In his lecture on disease of the knee-joint, Mr. Solly professes himself a convert to excision in suitable cases.

"When this operation was reintroduced by Mr. Ferguson in 1830, I confess I was very incredulous as to its value. I thought that those cases that would be cured by excision might be cured without it. I had had, as you have heard me say before, several cases of apparently hopeless disease of this joint, arrested by the repeated use of the moxa externally and cod liver oil within; a good firm anchylosis being the result. On the other hand I have had cases of ulceration of the cartilages which have been carried off by phthisis during the progress of a local cure. But we have yet no proof that either excision or amputation would have averted such an untoward result.

"The facts, however, that have converted me to the belief that excision of the knee-joint is not merely admissible in many cases, but that it is decidedly desirable, are—first, the time occupied in obtaining a perfect cure by anchylosis, which ranges from two to four years in all adults; secondly, that even in the most favorable cases there is great tendency to a recurrence of the disease: and, thirdly, that the statistics of the cases already published show that the operation is not so fatal as amputation of the thigh."

Mr. Solly is decidedly a conservative Surgeon; he desires the scalpel and gouge to take the place of the knife and saw as far as possible: indeed he states that he has only amputated the thigh twice for disease during his incumbency at St Thomas'. With these views we are rather astonished to find him amputate the leg for disease of the ankle-joint in preference to Syme's amputation at the ankle-joint, which gives so useful a stump and enables the patient to dispense with a wooden leg. He points out, it is true, that disease of the ankle is often situated in the calcaneo-astragaloid joint, and for such he recommends the use of the gouge, and gives more than one successful removal of the disease, a useful foot being retained. We quite agree with him, but where the disease is situate in the tibio-tarsal joint, there can be no necessity, in ninety-nine out of every one hundred cases, for amputation of the leg.

The volume is very rich in material for the reviewer, but the multiplicity of matter makes it difficult to select from. We see we have marked several paragraphs, the subject of which we cannot even hope to touch upon; but we cannot avoid referring to the excellent lecture on Partial Amputation of the Hand, from its very general application to all members of the profession. Few men, however little inclined for operative interference, can pass through a professional career without being called upon to deal with a crushed hand, and on the discretion of their dealing with it will depend the usefulness or otherwise of the remnant of the member. A crushed limb necessitates amputation to save life, as the physical suffering and constitutional irritation involved in the separation of the crushed part by mortification would destroy life; but:—

> "The same character of injury to a large limb, which necessitates amputation, does not do so in a smaller one, such as the fingers, thumb, or even a portion of the hand itself.
>
> "For instance, suppose in one of those crushing injuries of the hand, whether by machinery or by the force of gunpowder and shot, the thumb is wrenched out of its joint, with the carpus and all the muscles of the ball of the thumb torn through, but not quite detached, still united by some skin and cellular tissue, and the dorsal arteries intact, you ought not to remove the thumb with your knife but you should re-place it in its normal position and thus try to save it. If you fail and gangrene ensues, your patient is no worse; if you succeed, your patient retains a useful hand, though all his fingers may have been carried to the winds. It is astonishing how well these cases do, even when the connecting medium left seems to be little more than a narrow piece of dirty lacerated skin."

In a partial amputation of the hand rendered necessary by an injury, we were able to save, on one occasion, only the little finger, the thumb and all the others having been removed, but a more useful organ, resulted than any mechanism ingenuity could construct. A portion of the thumb and a portion of any of the fingers, if they can be saved together, constitutes an organ of prehension which may be imitated, but which the surgical mechanic cannot by any means equal.

There are three lectures on Stricture of the Urethra, replete with instruction, setting forth the evils attendant on neglected stricture when relief is sought of the Surgeon,—perineal abscess and fistula, extravasation and retention. Mr. Solly is very partial to the thread catgut bougie in very narrow strictures, and we extract his remarks on the first case of stricture narrated in the book, as they exhibit his views regarding the treatment of such cases:—

> "After enquiring what had been done, and finding that he had lost a good deal of blood in the attempts made to pass a bougie,—that no instrument had been passed and that there was a false passage,—I took a moderate-sized sound, and, passing it gently down the urethra, found that there was some spasm but not a great deal. Waiting a little I moved it onward again, till I found it absolutely stopped. After removing it I took a small catgut bougie, and passing it gently down, soon found it quitting the natural channel and entering a false passage. Having now ascertained the direction in which the passage ran, I then withdrew the bougie, and gave the point a slight

bend, and passing it in again, feeling round the urethra for the pervious spot, but avoiding the false passage, I managed to hit it off, so the instrument slipped into the bladder without using the least pressure or force.

"This is the great secret in the use of the thread-sized catgut bougie: it must be handled most delicately, turned in the urethra something like a cork-screw, till the hole through which the urine escapes from the bladder is pitched upon: and this is immediately felt by the instrument passing forwards without any sensation of obstruction. The catgut bougie must never be used with the idea of breaking down a stricture or pushing throught it, but, if I may so express it, coaxing it into the bladder. Whenever you find the bougie spring back, you must stop and give it a little twirl between your fore finger and thumb; you may often have to work for half an hour or more in this way, without being able to hit off the opening; but patience and delicate handling will do a great deal. I assure you it is worth taking some trouble to relieve a fellow-creature effectually of such a serious malady without the use of the knife. Having passed the stricture and entered the bladder, I desired that the bougie should be retained there for an hour. I attach great importance to the retention of the bougie; and with the catgut bougie there is this additional advantage that the bougie swells to twice its original size."

Latterly Mr. Solly has had gum elastic catheters constructed to fit on and pass over the catgut bougie, on the same principle as Mr. Wakley's instruments. When the stricture is so small that neither skill nor patience will overcome it with the aid of the bougie alone, Mr. Solly cuts through the perinæum, lays open the stricture, and passes on the catheter to the bladder.

We must now take leave of Mr. Solly's book although we might quote more largely much instructive matter from its pages. Mr. Solly almost apologizes for offering his Surgical Experiences in their present form, but English works detailing personal experience are much too scarce. The book will take a high place among works on Clinical Surgery, and it is very much to be desired that other Surgeons of great experience would follow Mr. Solly's example.

NOTE.—The Editor is indebted to the kindness of a friend for the above notice of Mr. Solly's *Surgical Experiences.* He feels that he has, probably, thus obtained a more thoroughly impartial review than might have been the case if it had been written by himself, formerly one of Mr. Solly's Dressers, as the reverence due to an honored Master sometimes leads to a pardonable bias in his favour.

PART III.

MEDICAL MISCELLANY.

No. 1.—*Case of Enormous Aneurism of the Thoracic Aorta, causing absorption of the bodies of several vertebræ, and proving suddenly fatal.* By W. FARQUHAR, M. D., Garrison Assistant Surgeon, Bangalore.

COOMARASAWMY, aged 40, a horsekeeper, was admitted into the Civil Hospital, of which I was in temporary Medical charge, on the evening of 6th June 1865, complaining of much dyspnœa and palpitation. Had been dissipating and keeping late hours for two or three days back, while celebrating a festival.

When seen by me next morning, he was looking ill and anæmic, though his body was well covered with fat; the pulse was small, feeble and intermittent; the heart's action was excited, but otherwise normal. There was dullness over the whole of left side of chest, and the respiratory murmur was inaudible. About four hours after the above visit, he expired suddenly while changing his position on his cot.

Inspection.—Left pleural cavity filled with bloody serum and large clots of blood; left lung compressed.

A very large solid tumour, of a conical shape, with the base upwards, was seen to be attached to the left side of the vertebral column.

This proved to be an aneurism of the thoracic aorta, commencing about an inch below the arch, and extending the whole length of this division of the aorta. It was firmly attached to the bodies of the dorsal vertebræ, from the 4th to the 10th.

On removal by the knife, the bodies of the 4th, 5th, and 6th vertebræ were found almost entirely absorbed, while the intervertebral cartilages remained intact. The bodies of the above vertebræ formed the posterior boundary of the tumour, the wall of the sac having been completely eroded, while at the same time, by its edges, it retained a firm attachment to the sides of the spinal column.

The aneurism was almost composed of coagulum, and there was a deposit here and there of osseous matter, on the inner surface. The blood had escaped from the depending portion of the tumour, which was attenuated and torn.

The heart was free from any disease or osseous deposit.

Remarks.—The very solid nature of this tumour, formed as it was of gradually deposited concentric layers, showed that nature had long striven to avert a fatal issue.

Since the above case, my attention has been attracted to the frequency of aneurism and other irregularities of the arterial system, and by keeping the possibility of the presence of such diseases prominently in view, I have succeeded in detecting them, where they might otherwise have passed unsuspected.

In October 1865, a pensioned soldier, engaged in trade, and addicted to drinking, incidentally spoke to me of severe pains which he referred to both clavicles, to which he had been applying iodine and other local remedies, under the impression that the pains were rheumatic. I asked to see the parts, and I immediately detected a prominence of each sterno-clavicular joint. On applying my hand to each tumour pulsation was very distinctly felt, and there was a strong thrilling sensation communicated when the finger was applied to either subclavian artery. From the very yielding nature of the tumour, it was apparent that little or no deposit had taken place within the sacs. The two swellings were very symmetrical, and both encroached on the lower aspect of each articulation. I at once forbad the use of any local remedies, and told this person that his only hope of prolonging his days lay in the leading of a quiet and sober life. I also prescribed the acetate of lead in 3 grain doses which he continued to take for some time. I saw him twice within a month, and at my second visit, the pains had disappeared, and the pulsation seemed, if any thing, less. In May of this year, I happened to see this person and was gratified to see that the swellings had made no progress. He vowed he had been living very temperately since I had frightened him by informing him of the nature of his complaint.

Another case came recently under my observation.

Mrs. L.—A native aged 37 years, wife of a European Pensioner, was admitted into the Garrison Hospital 12th February 1865, with symptoms of uterine and ovarian disease. She did not improve much under treatment, and she became very hysterical, fretful, and complaining. She stated that she had often suffered severely in her head, but her friends and her husband had looked upon her ailments as imaginary, and used to think she was mad. In Hospital, her complaints of pain, &c. were so changeable both as to nature and site, that it was difficult to imagine any thing but Hysteria to be the cause. A rapid emaciation and localization of what appeared to be excruciating pain, led to a strict examination of the thorax, and the discovery of an aneurismal tumour projecting slightly above the sternum. This swelling rapidly increased and she was found dead on the morning of 16th March, having discharged a large quantity of blood by the nose and mouth.

An *inspection* of the body revealed an aneurism of the arch of the aorta, and branches given off by it, of the size of an orange, and which had caused slight absorption of the upper part of sternum to which it was adherent. On the left side of the tumour there was nothing but the bare coats of the sac which had given way by a gradually contracting circular opening, which at last burst into the left bronchus by an aperture the size of a goose quill.

No. 2.—*A Case of Open Foramen Ovale, but not attended with Cyanosis, till two or three days previous to death.*

By W. Farquhar, M.D., Garrison Assistant Surgeon, Bangalore.

15*th April* 1866.—C. J., Gunner, Artillery Veteran Company, Ætat. 40 years, came into the Garrison Hospital last evening, complaining of great dyspnœa, which had been gradually increasing for some days. Was feeling very weak, and said that he got no sleep at night, and that he had lost his appetite. Complained also of a sensation of heat all over his body. Little or no cough.

This morning I find him sitting up in bed with an anxious and dusky countenance. His body is emaciated, and his appearance generally is that of a person far advanced in Phthisis, under which heading he is admitted.

Has been in Bangalore for 20 months on private leave, but never presented at hospital before. Had been taking Cod-liver oil and stimulants outside, and was living in every way as generously as his means permitted.

Physical Examination.—The chest walls do not move freely, and pain is caused by a deep inspiration. Percussion elicits considerable resonance over all the thorax, except the right sub-clavicular region where there is dulness and cavernous respiration.

Moist râles are heard over the greater portion of right lung.

Respiration is more difficult than hurried; pulse strong, sharp, and full. No abnormal heart-sounds, but complaint is made of "a fluttering, sickening feeling" at the *scrobiculus cordis,* where a very rapid pumping sound is heard.

The finger nails are quite livid.

Ordered low and pudding diet, and one measure of brandy, also Æther. Chloric, ♏xx. three times a day.

Tinct. Iodinii to be applied to right sub-clavicular space.

16*th April.*—Much the same, had a little sleep towards morning.

On speaking of his history, he says he has always "been up to hard work," till about a year and a half ago. Dates his first illness back to about 1860, when he was nearly blown up in the great powder explosion at Secunderabad. Says that, from that time, he has "never been the same man," having received a very severe shock on the occasion. I find also that he has sustained the loss of his hard and soft palate. Denies having ever had syphilis, and says that this arose from an ulcer which grew larger and larger under the application of caustics.

Continue Omnia.

18*th April.*—Lying on his cot quite insensible; respiration stertorous; face and hands quite blue; pulse strong and full; cannot be roused. Had an attack similar to this last evening and rallied from it after some time. Had a measure of portwine last night, besides brandy.

Continue Omnia.

19*th April.*—Was found dead at ½ past 5 o'clock this morning, in a natural attitude, with a hand under the pillow, and lying on one side. Was moving about yesterday in his usual state, and ate a good dinner.

Inspection seven hours after death. Body emaciated and rigid.

Thorax.—Slight adhesions of the pleuræ to sternum. Right lung adherent in several places; very firmly so at apex. Left lung not adherent. Two or three ounces of fluid in pericardium. Base of right lung adherent to diaphragm. A large vomica in apex of right lung, containing some dirty pus. The apex of this lung was so firmly adherent that it remained attached to the parietes. Both lungs were very much congested and densely studded with bloody points, the size of a pea, giving the cut surfaces a very mottled appearance.

Heart.—Larger than usual, and the walls a little thicker. Right ventricle full of coagula, easily removable with the exception of a clot which had a fibrinous appearance, and was rather difficult to detach.

In the place of the auricular septum there was a circular opening, nearly the whole diameter of the auricles; the edges of the little partition there was, were rounded and bore no marks of recent formation.

Remarks.—The history of this case would seem to point to the following as the most probable order of events; viz., that the great shock to which the patient referred his first illness, did really cause a rupture (perhaps slight) of the auricular septum; that so long as the patient was in health, the currents of blood maintained their separate courses; that failing health and a gradual increase of the abnormal opening of the *septum auriculare,* led to a carbonization of the blood, in time leading to congestion, inflammation, and suppuration in the lungs, and possibly causing the ulcerative action in the roof of the mouth. That absorption of pus from the lung abscess took place, and led to the formation of a fibrinous clot in the right ventricle of the heart.

That this embolism (for as such I look upon it) was sufficient to disturb the equilibrium of the circulation in the heart, and so cause an intermingling of the currents of blood, and consequent Cyanosis.

That such an order of occurrences as I have ventured to suggest, is not only possible but probable, may readily be seen by a reference to the chapter on Cyanosis, in "Walshe's Diseases of the Lungs and Heart." In the *Medical Times and Gazette,* vol. i. for 1860, p. 459, there occurs a case where the foramen ovale was found *completely* open after death, and where, during life, there was nothing but an occasional duskiness of countenance to point to such a lesion.

No. 3.—*A Case of Hydrophobia.* By W. FARQUHAR, M.D., Garrison Assistant Surgeon, Bangalore.

10*th November* 1865: 6½ P. M.—Assistant Apothecary Smith was called to see P. H., Private, Queen's Pension Establishment, aged 45 years, a powerfully-built man, reported to be seriously ill from a feeling of suffocation and inability to speak, for which he and his friends could in no way account.

Had been ailing two or three days of soreness of throat, with pains about the shoulders and chest, and uneasiness of breathing, with disinclination for, and shrinking from, liquids. Had not slept for three or four nights. This morning he had been advised to take some Morrison's pills. Mr. Smith found him sitting on his cot, held by his wife. Breathing was performed hurriedly, and he looked about fearfully as if in dread of something. Mr. Smith having seen several cases of Hydrophobia, recognized the disease and enquired if he had been bitten by any dog. His wife stated that he had been bitten two months before by a dog supposed to be mad, and on account of which he was attempting to force some medicine down the dog's throat. He was in the habit of rearing dogs for sale. The wife had also been bitten at the same time. He was brought to Hospital about 7½ P. M. On getting out of the carriage, which he had carefully shut against draughts, he rushed into the ward and hid himself behind the folding-screen. He then lay quietly down, without speaking. He appeared quite conscious of what was going on.

On being made acquainted with the case, Dr. Rogers, Garrison Surgeon, and I, went over to see the patient. On approaching him, he started up from his cot, suddenly, towards me. He seemed in great distress, and when asked whether he was in pain, he energetically and repeatedly struck his throat with the back of his hand, and hurriedly indicated the seat of uneasiness by running his hand along both upper extremities and around the thorax on a line with the mammæ. He could not articulate properly, but nodded assent to any question, and kept gulping the air, as it were, by fits and starts.

He muttered something about his inability to swallow water, and was rather violent in his gestures when doing so, and pointed steadily to his throat. The mouth was now and again elongated by the drawing in of the corners.

At intervals, the countenance was natural, though, for the most part, the features moved convulsively, the mouth especially working constantly. Occasionally he beat his chest and abdomen sharply with his closed fist. The thumb nail of right hand was seen to be wanting; it came off some time after the bite. No tenderness of thumb, but the end of the phalanx was prominently pointed.

Pulse 120; tongue moist, with a slight whitish fur; the roof of the mouth and the fauces were covered with a loose whitish coating. He complained of a burning in the back of the throat and in the eyes.

Ordered Calomel ʒss. and Ext. Cannabis Indica gr. ii.
To be made into 4 pills.

These were swallowed with some difficulty.

Ice to be sent for immediately.

10 P. M.—Ice had fortunately been procured, and it was now applied to the nape of the neck.

The good effect of this was almost immediate, as he at once began to talk freely and without stuttering or much hesitation.

He was most profuse in his expressions of gratitude for the comfort he was receiving, and before 10 minutes had elapsed, he, of his own accord, said that the uneasy and burning sensations in the throat were "going away."

The ice was then mixed with salt and put into two bladders, and kept on the neck and between the shoulders. So marked was the beneficial action of the ice, that it was determined to omit any further remedies so long as the symptoms did not increase.

12 P. M.—Beginning to get more restless; slaps his abdomen, chest and mouth, very frequently, saying there is "a fire in my belly and my eyes." Gets up now and again and clutches

convulsively at any thing. Does not like the ice so much, and fresh application of it seems to take away his breath.

Acet. Mylabris is painted along the course of the spine.

12½ A. M.—Ol. Crotonis ♏ iv. in yolk of egg, were given.

1½ A. M.—Is doing his best to swallow some bread, which he dips in water to moisten it.

Hot coffee is ordered for this purpose. The pulse is 156, and feebler than before. The surface also is colder.

2 A. M.—Continues to eat bread in small quantities, dipped in coffee and wine.

Passed a loose fæculent motion. Will not have more ice applied to neck.

His sensations of distress are now mostly referred to the abdomen, where he feels there is "something to come up."

Repeat Cannabis and Calomel pills for which he is clamorous.

Ice to be applied intermittingly to abdomen.

4 A. M.—On trying to swallow some wine he was nearly suffocated, and sprang off the ground.

5 A. M.—Has been several times on the stool, passing small quantities of fæculence. Says his head now is on fire, and begs it be blistered and to have ice applied, which latter is done. Cannot rest in one position. Hand constantly slapping the belly. No reference to throat. Is feeling sick at stomach.

6 A. M.—Asked for and swallowed some thick conjee with a spoon, but would not drink it.

7½ A. M.—There is a temporary lull in his aversion for liquids. Altogether he looks so promising that I leave him for a time. Ordered to get a soft boiled egg frequently.

11 A. M.—The Apothecary writes that he is worse, that his breathing is more hurried, that he has burning sensations all over the body, which, he says, catch his breath. Avoids talking, and requests he may not be spoken to. His pulse is 144; spasms frequent; face dusky.

¼ *to* 12.—Find patient clutching both sides of his cot with his hands; eye-balls rolling about wildly; countenance livid; features incessantly in motion, as if he were trying to chew something sticking in the teeth. Frequent movements as if about to vomit. Sometimes a little wind is expelled, but gives no relief, and every now and again a fearfully severe fit of dyspnœa comes on and is succeeded by violent efforts to cough or hawk up something sticking in the throat. On two or three occasions a very tough ball of mucus was forcibly ejected from the mouth.

The whole expression of face is indicative of the most extreme anguish. Body covered by cold perspiration; pulse 140, less in force. When taking food, which he can now only do with a tea-spoon, he prepares himself as if for some desperate effort, and convulsively snatches each spoonful and tries to facilitate the descent by violently rubbing down and beating his throat which is very red from this usage. Is getting very sensitive to the slightest draught, and shouts madly whenever he fancies an air of wind strikes him, though all the doors and windows are closed. When he hawks up any mucus, he says "it smells like stinking cabbage or rotten eggs."

Ordered Ext. Cannabis Indicæ gr. vi.
P. Ipecac. ʒss. to be made into boluses and chewed.

¼ *to* 1 P. M.—Pulse 156; duskiness increasing; is incessantly talking and always on religious subjects. No vomiting. The paroxysms of suffocative breathing are getting more and more frequent. To give some relief 10 grains of Morph. Hydrochloras were sprinkled on the raw surface on nape of neck.

Within ten minutes of this application he became so much quieter and easier, that I could not help attributing this to the narcotic action of the same; and as it was only given to afford relief, even at some hazard, I wiped off the remainder of the Morphia with a sponge.

2 P. M.—Is sinking fast. Face and whole surface livid; pulse flagging; respiration, slow and laboured; paroxysms very slight; is now quite unconscious and cannot be roused. Artificial respiration had the effect apparently of retarding the fatal issue. He continued in the above state till 20 minutes to 3 P. M. when he expired without a struggle.

Inspection—18 hours after death.

Cranium.—Dura mater adherent to left hemisphere of cerebrum on the upper surface adjoining the falx cerebri, throughout nearly whole length, for an inch in width. These adhesions were firm, and evidently of long standing. (I mention here that his wife said he had suffered from sunstroke some years before). White substance of both hemispheres studded with red points. In left lateral ventricle there was ℥ i. of fluid—none in right. Large veins at base of brain empty.

Cerebellum, quite normal. No traces of the products of recent inflammatory action here or in any part of brain.

Spinal Cord as far down as fifth dorsal vertebra, perfectly healthy to the eye. No redness or injection of theca vertebralis or pia mater. Cord of normal consistence. No fluid.

Interior of Larynx and Œsophagus normal. Only in the former the mucous membrane had a dull, brownish appearance.

Time and other circumstances forbade a further examination of the cavities of the body.

Remarks.—The long incubation of the disease in this instance, recalls vividly to my recollection a similar case which came under my observation, when a student, 15 or 16 years ago. As a clinical clerk, I was present in the Ward on the admission of an intelligent farm servant, who had been urged to come to Hospital by the Parish Minister, in order to have something done for two or three trifling, painful sores which had re-opened on the left arm. These he stated to have been caused three months before, by the bite of a dog, which was not suspected, however, of being mad. The man treated the affair as trifling, but the injudicious manner in which the clergyman had hinted at the possibility of his getting Hydrophobia, seemed to prey a little on his mind; but he had no symptom of the disease. Next morning Hydrophobia set in, and carried him off on the day following. He was kept, with slight intermissions, continuously under the influence of chloroform.

No. 4.—*Ovarian dropsy, eight years' duration; Ovariotomy: adhesions separated by the cautery, and pedicle ligatured and left in abdominal cavity; speedy recovery.*

By W. H. HARRIS, M.D., Supt. Govt. Lying-in Hospital.

April 11*th*, 1866.—M.C., Æt. 23 years, an East Indian, 3 years married, presented herself at the Dispensary attached to the Lying-in Hospital, with a large abdominal tumour having all the characters of Ovarian disease of a partially cystic, and partially solid form.

Present state.—The tumour is irregular in shape, and seems to consist of a number of cysts and of a solid portion, united into one large mass. Fluctuation is distinct on the right side of the abdomen but on the left there is none, and this portion of the tumour is dense and appears solid, while in the median line above the umbilicus a depression exists, which feels hard and cartilaginous, like a large cicatrix. Some portions of the tumour are more prominent than others, and the irregularity of its general contour is considerable. The abdomen measures 11½ inches from the ensiform cartilage to the umbilicus, 6½ inches thence to the pubes, and is 40 inches in girth. Examination per vaginam discovers the tumour to be above the pelvic brim, the uterus occupies nearly its normal situation, but is a little more anterior than natural, and its cavity is not increased in length. Abdominal parieties can be moved pretty freely over the tumour, and the usual friction sound is thus distinctly produced. Some slight dyspnœa on exertion is complained of, but the general health is good, and the vital functions are not interfered with, to any appreciable extent, by the presence of the tumour.

History.—States that she first discovered the tumour upwards of eight years since. It then occupied the right side, and was as large as a child's head. Before this she had frequently suffered from pain in that situation, but had no idea from what cause it proceeded. The tumour has since slowly increased in size up to the present time, without any pause in its progress, but the enlargement was so gradual that it was only just perceptible from month to month. During the last year or two, the catamenia have been regular and normal, but before then, her "returns" were very irregular—sometimes suppressed for 6 months or so at a time—and usually very scanty and of short duration. She was under treatment four years ago for amenorrhœa, and, a year afterwards, she married, with the sanction of the Doctor, who, she states, said he saw no reason to prevent her, in the presence of the tumour.

To be under observation as an out-patient.

May 14*th.*—Was seen again to-day. Tumour more prominent in front, above umbilicus, and fluctuation is more distinct and perceptible on both sides of the abdomen. Has been restless at night, and unable to lie down without getting dyspnœa; appetite and general health still pretty good.

Made an in-patient.

June 13*th.*—Since her admission, scarcely any change has taken place, except a slight increase in the size of the tumour, and a more distinct sense of fluctuation at all points. The abdomen measures 40½ inches in circumference, midway between umbilicus and ensiform cartilage, but the vertical measurement is the same. Deputy-Inspector General Porteous, and Surgeon J. L. Paul, having kindly examined the patient and concurred in the advisability of operating, and the patient having expressed an earnest desire of having the tumour removed at any risk, as her life had become a burden to her, I determined to extirpate the diseased ovary instead of tapping, as so large a portion appeared to be solid, and only very partial and temporary relief could be expected from the latter expedient. A delay of a fortnight, however, has occurred in consequence of the catamenial period being nearly due. It was passed five days since.

Operation.—The bowels having been cleared out by a dose of oil and an enema yesterday, and small pieces of ice given to her to suck for a couple of hours this morning, she was conducted at 7 A.M., into a spacious ward, where everything had been prepared for the occasion, and in which she was to remain after the operation. The floor of the ward had been sprinkled freely with water, and a vessel of water kept boiling in it to modify the dryness of the atmosphere. She was then placed on the end of an ordinary operating table, in front of a window, with her feet over the end supported by bandages to the legs of the table, and her body raised to a comfortable elevation by pillows. Chloroform was then administered by Assistant Surgeon Furnell, who, with Doctors Porteous, Paul, Cornish and Chipperfield, were kind enough to be present on the occasion, and as soon as she was fairly under the power of the anæsthetic, an incision four inches in length was made through the integument of the abdomen, in the median line, from the umbilicus to within two inches of the pubes. The structures beneath were then carefully dissected, and the peritoneum being exposed, was divided on a director. A very small quantity of ascitic fluid escaped, and with it a portion of the omentum, which was found completely overlying the anterior surface of the tumour and adherent to it inferiorly. As far as could be ascertained, no adhesions existed between the omentum and abdominal parieties, on either side, but the left side of the tumour still seemed to consist of so much solid matter, that it was deemed impossible to extract it without enlarging the opening; and to save time and to remove the omentum out of the way with greater facility, the incision was extended upwards, on the left side of the umbilicus, for an inch and a half. The omentum was then carefully drawn on one side, and the glistening surface of the tumour fully exposed to view. A trocar and canula were plunged home a little on the right of the median line, and 15 to 20 pints of slightly brownish-yellow, puriform fluid withdrawn. A broad doubled piece of flannel was stretched over the abdomen close up to the rim of the canula, so that not a drop of fluid entered the abdominal cavity. When the flow had ceased, the adhesions between the omentum and surface of the cyst, which were numerous and rather extensive in some places, were cautiously divided by means of a cautery, which answered well in preventing hæmorrhage, though all of them contained vessels of pretty considerable size passing on to be distributed to the cyst wall. In one or two instances a ligature was required, for which purpose very fine silver wire was used, and the ends cut off short. The cyst which had greatly collapsed was then seized by a vulsellum, and turned out without difficulty, and it was found attached by a thin broad pedicle, extending from the insertion of the ligament of the left ovary into the uterus, for five or six inches outwards along the broad ligament on the left side, the left Fallopian tube being turned up in contact with the posterior surface of the cyst. The pedicle was so short and broad that a clamp could not have been applied without very great difficulty, and, as those at command were imperfectly constructed and not at all suitable or trust worthy, an attempt was made to divide the pedicle by the cautery, in the same manner as the adhesions had been separated, the cyst and the remainder of its contents being well raised up the while to take off all strain from the pedicle. A double piece of small whip-cord, however, first was passed through the thinnest portion of the pedicle, at its centre, as a safeguard, and the heated cautery then applied to the thin external edge of the attachment of the cyst. A large vessel almost immediately began to spout, and I deemed it advisable, under the circumstances, to abandon the cautery for want of a proper clamp, and to deligate the pedicle instead. This was done in three separate portions, and the whole of the pedicle was then encircled by an additional whipcord ligature, close to the preceding. The cyst was cut away about half an inch from the ligature, and all the ends of the latter being cut off close, the pedicle was dropped *in situ* in the cavity. The left Fallopian tube was thus divided almost close to its junction with the uterus.

No hæmorrhage threatened from any of the points where the cautery had been used in separating the adhesions, and a few small coagula having been carefully removed with a sponge, the omentum was returned into the abdomen, and the wound closed as speedily as possible, by five deep and six superficial wire sutures. The former were inserted an inch apart, and nearly the same distance from the edge of the incision, and were carried across to the opposite side without transfixing the peritoneum. A compress of lint was laid on the wound and three long pieces of strapping over it to the sides of the abdomen, which was finally supported by a many tailed flannel bandage.

During the entire operation the intestines were not in the least brought into view. The pelvic organs alone were seen.

The fluid which had been drawn off and that which remained in the cyst, together weighed 24 lbs., and the solid part of the tumour 3 lbs. On examining the latter it was found to be of an irregular oval form, projecting in a somewhat sacculated manner in some parts, and depressed in others ; the structure of the parieties at the points corresponding with the depressions being thicker and of a more dense and tendinous nature than the other parts.

No vestige of smaller cysts, or of the ovary, could be seen externally, but on opening the cyst the ovary was found, six or eight times its natural size, attached to or imbedded in the inferior and inner side of the cyst wall, which seemed to spring from beneath it ; and several firm thick bands of fibrous tissue passed from the base of the ovary to the cyst wall on each side. The coat of the ovary was enormously thickened and on cutting into the substance of the mass, it was found to consist of a number of cysts, varying in size from a large pea to a hazel nut, filled with an opaque fluid and surrounded by degenerated fibrous tissue and granular matter.

The patient vomited slightly once or twice during the operation, but it did not become necessary to discontinue the chloroform until after the cyst had been removed. As the patient became rather depressed, however, a little brandy and water was administered at intervals during the closing of the wound, and she rallied well by the time the dressing was completed. Pulse then 108, weak. After being put to bed she was ordered to have hot water, in bottles, applied to the feet, and tincture opii. ♏ xxv with brandy ½oz. and a little cold water. The draught to be repeated in a couple of hours, or sooner if necessary, and broth to be given at intervals of three hours. Small pieces of ice to suck if there be any vomiting.

Vespere.—Vomited after taking any nourishment, but kept down the draught, and a pill composed of 1½ grs. of opium; still feels sick; has not slept at all, and seems rather restless; pulse 120, skin a little hot; complains of a weight and dragging in the lower part of the abdomen, and there is a little tenderness near the wound. Refuses the ice.

℞. Ammon. Carb. grs. xx.
Tinct. Opii. ♏ x.
Acid Hydrocyan. Dil. ♏ ii.
Aquæ puræ ℥ii. Mt. Ft. Haust.
℞. Acid Citric grs. xv.

Sign:—the effervescing draught to be taken every three hours.

To have broth or milk when sickness is allayed.

14*th.*—Slept a little through the night at intervals; still some little tenderness, but dragging, &c. less; pulse 100, small; skin cool and moist; tongue clean; sickness ceased.

Small stupes to be applied three times a day over the tender spots.

℞. Opii. gr. i. ter in die.
Custard, milk, and broth.
Omit. haust.

15*th.*—No pain or tenderness; pulse 94; skin and tongue natural; slept well and takes the nourishment.

16*th.*—Going on well. Deep sutures removed. Wound uniting by first intention.

19*th.*—Wound united; no unfavourable symptom.

21*st.*—Superficial sutures removed. Bowels not relieved yet; had a warm water enema yesterday but without effect.

Rep. Enema aq. tepid.
Chicken diet.
Wine 3 oz.

26th.—Bowels have acted naturally after a dose of oil on 23rd. Wound quite healed. Patient walking about the ward.

30th.—Patient quite well and getting strength daily.

Remarks.—There are several points of interest in this case, I think, worthy of more than passing notice. First, the conditions of the tumour on external examination rendering the diagnosis imperfect, affords another illustration of the difficulty which is often experienced in determining the proximate characteristics in ovarian as well as other abdominal tumours. Next, the situation of the omentum, which covered the whole of the anterior surface of the cyst. Text books do not refer to the possibility of this occurring, and as far as I can remember without referring, I cannot call to mind a single case before of its being met with in front of the tumour. The omentum in this case was enormously elongated and hypertrophied, and if tapping had been performed, there would have been a great risk of wounding some of the large vessels with which it was liberally supplied. This must be regarded as an additional risk in tapping in all cases, but as it happens so seldom that the omentum intervenes between the parieties and the surface of the cyst, it cannot carry much weight as a reason for influencing our decision in respect to the mode of treatment to be pursued. Then, it may be interesting to the Pathologist to enquire as to the manner in which the ovary became in contact with the interior of the cyst wall. That it was actually external to the cavity of the cyst there can be no doubt, in the same way as the stomach and liver are external to the cavity of the peritoneum. The mode in which the change in its situation has come about is difficult to explain, but I am inclined to think that an intimate union has been contracted by the cyst wall to the proper coat of the ovary, at all points, under the combined influences of pressure and the changes effected by inflammation;—the former of these may have caused the cyst wall to be reflected over the ovary, and the latter, to be united to it and to the structures in its immediate vicinity. Lastly, I may refer to the rapid healing of the wound and recovery of the patient. The cautery was freely used in separating the adhesions of the omentum, and the ligature of the pedicle consisting of four separate pieces of whip-cord, was cut off close and left in the cavity of the peritoneum. Both of these plans are comparatively recent and are opposed on very fair grounds; the objections being based on the supposition that the slough in the one case and the remains of the ligature itself in the other must act as foreign bodies, and, in all human probability, set up irritation, peritonitis, &c., and destroy the patient. In practice, however, these severe consequences have not resulted, and though sufficient experience may not have been gained by the cases recorded by Dr. Tyler Smith, Mr. Butcher, and others, for the general adoption of this mode of treating the pedicle in preference to others, its perfect success in this, as well as the other cases, should obtain for it a fair trial to save it from being condemned on theory.

NOTE.—We are glad to be in a position to state that this patient continues in good health. The catamenia returned this month (July) at the usual time, viz., on the 6th and ceased on the 10th.

No. 5.—*Four Cases of Stricture of the Urethra, successfully treated on the "immediate" method of Mr. Holt.* By Surgeon W. H. HARRIS, M. D., in Medical charge of the Madras Penitentiary.

CASE No. 1.—E. G. Soobiah, aged 30, a Comity, under sentence of imprisonment for 18 months, was admitted into hospital on the 21st February 1866, complaining of very great difficulty in voiding his urine in consequence of a stricture of long standing. The stricture followed an attack of gonorrhœa, and has existed for four and a half years; since that time, the stream has more and more diminished in size, and for some months past his urine has been passed almost *guttatim*. Great efforts are always required in micturating, and even then he seems quite unable to empty his bladder.

On attempting to introduce a catheter, a close stricture was found in the spongy portion of the urethra, about three inches from the meatus, extending an inch or more backwards. After considerable difficulty and perseverance, a No. 2 catheter was passed into the bladder, and 9 or 10 oz.

of urine drawn off, although the patient stated that he had passed urine only shortly before and thought he had emptied the bladder. The catheter was left in for an hour, and re-introduced on the 23rd. On the following days, Nos. 3 and 4 were successively passed, and on the 28th, No. 5 was got in. Then, withdrawing the catheter after it had remained a few minutes, I inserted Mr. Holt's instrument, and split up the stricture with a No. 5 dilator. A No. 8 catheter slipped in easily afterwards, and the patient was sent to bed and ordered a draught with 2 grs. of Quinine and 10 drops of Tincture of Opium every four hours.

Very little pain was caused by splitting the stricture, not nearly as much as by the introduction of the catheter on the first occasion, and it was only momentary. No rigor or other unfavourable symptom followed, and the draughts were omitted on the following day, when the patient was able to pass his urine in a full stream, and without much uneasiness. Only a little soreness was complained of. A No. 8 or No. 9 catheter was passed on alternate days for the first fortnight, and subsequently at progressively longer intervals, until the end of a month, when he was pronounced cured.

June 30th.—I passed a No. 8 catheter to-day with perfect ease; there seems to be no tendency to contraction as in cases where the stricture has been simply and gradually dilated, though it is quite three months since an instrument was last introduced.

CASE No. 2.—John Peters, aged 47, an East Indian convict, under sentence of seven years' transportation from the Straits, was admitted into Hospital on the 21st March 1866, for the purpose of undergoing the "immediate treatment" for a stricture of the urethra of five years' duration. Was under treatment a short time since for perineal abscess, from which he has suffered many times since the stricture first came on. There are cicatrices of perineal fistulæ, and one of these is still unclosed, but he states that the discharge from it is not very great. Urine is voided in a small forked stream. The stricture followed repeated attacks of gonorrhœa, for which he was treated only by native remedies.

A No. 5 catheter was tightly grasped by the stricture, which was situated about two inches from the meatus and extended more or less along the whole of the spongy portion, but I ultimately succeeded in passing the instrument into the bladder.

On withdrawing it, without drawing off any of the urine, Mr. Holt's instrument was introduced and the stricture split up with a No. 9 dilator. Very little pain was produced and a No. 9 catheter having been inserted in its place with ease, the urine was drawn off. Finally the patient was sent to bed and ordered draughts containing 2 grs. of Quinine and 10 drops of Laudanum every four hours. No unfavourable symptoms followed, and next day the urine was passed in a full stream, only a little soreness of the canal being complained of. No. 9 catheter was afterwards passed on alternate days for a fortnight, when the patient was discharged.

June 30*th.*—No. 9 catheter is passed with ease; patient states that he had a small swelling in the perineum after leaving Hospital, but it did not suppurate. As he was not sent back to Hospital it must have been of little importance, and the cause may have been latent before the splitting of the stricture.

CASE NO. 3.—Soobroya Karantha, aged 45, a Brahmin convict, under sentence of transportation for nine years, was admitted into Hospital on the 1st of April with stricture of the urethra of four years' duration. Urine passes *guttatim*, and he is complaining of loss of appetite, rheumatic pains and sleeplessness, which he ascribes as due to his difficulty of micturition, but which, considering his position, are more properly referrible to his prospect of speedy embarkation for the Andamans. The stricture followed a severe gonorrhœa, which continued for a year under treatment by native remedies, and was found to extend nearly the whole length of the urethra, from within an inch of the meatus through the spongy and membranous portions to within a short distance of the neck of the bladder. At one or two points it was cartilaginous, and throughout its extent almost impervious. Instruments of various sizes were tried in vain, for some time, until, after great perseverance, No. 2 catheter was gradually passed on through the contracted canal into the bladder. The man fainted as he stood during these repeated trials, and the instrument which was ultimately got in when he had been placed on his back was retained in the bladder for an hour. No. 3 was introduced next day, and on the following, No. 4. Then, on the withdrawal of No. 4 catheter I immediately passed Mr. Holt's instrument, and being satisfied that it was in the bladder, I inserted No. 7 "dilator" along the conducting cylinder through the stricture, splitting it up. This was done while the patient was standing, and the pain, though sharp for the moment, was of such short duration that no syncope followed, as when the catheter was being passed on the first occasion. No. 8 catheter slipped in with ease, after withdrawal of the dilator, and the urine was drawn off. Quinine 2 grains and Laudanum 10 minims every four hours until next day, when, no bad symptom supervening, the medicine was discontinued. Patient could pass his urine in a full stream with very slight pain, and No 8 catheter was introduced daily until the man was discharged to be embarked for the Andamans four days afterwards.

Case No. 4.—Narrainen, aged 28, under sentence of one month's imprisonment, was admitted into Hospital on the 18th May 1866, with a fistula in the anterior surface of the scrotum, and considerable enlargement and induration of the left testicle. States that he had gonorrhœa and syphilis more than a year ago, and immediately afterwards great pain and swelling of the left testicle, and an abscess in the situation of the present fistula. Passes his urine in a small forked stream, which he is very loathe to admit, fearing he may be operated on, but has never suffered from retention of urine, or been treated for stricture, or for the fistula, except by the application of dressings to the latter. On 21st, I ascertained the existence of a stricture, an inch and a half from the meatus of the urethra, and after much difficulty succeeded in passing a No. 2 catheter through it. Another stricture was then encountered an inch further down, extending through the membranous portion. At the triangular ligament it was impermeable, and I failed after repeated attempts to overcome it; and as some bleeding occurred, I desisted. On the 24th I again essayed to pass No. 2 or No. 1, but without being able to overcome the first stricture owing to the irritability and spasm of the urethra. I then tried with a larger instrument, and finally succeeded in passing No. 5. It required continuous and steady pressure for some minutes to get it through the membranous portion, but no force was employed. The catheter was retained for half an hour, and after its withdrawal Mr. Holt's instrument was inserted and No. 9 dilator employed. Much force was necessary to push the dilator home along the conducting cylinder, and the man, who is a very nervous subject, being taken by surprize, cried out lustily from the pain, but it passed off in a couple of minutes, and, after withdrawal of the dilator, No. 9 catheter slipped in easily and the urine was drawn off.

Quinine and laudanum were given for twenty-four hours when, there having been no rigor or fever, the medicine was omitted. He could then pass his urine in a full stream, and no impediment was found next day in introducing No. 8 catheter. This was continued on alternate days, and on the 30th it is reported "No. 9 catheter passes easily." At the expiration of his sentence the fistula had almost entirely closed, and No. 9 could still be readily passed.

Remarks.—The great advantage which his method of treatment possesses over the former plan of gradual dilatation is sufficiently proved by the large number of cases reported by Mr. Holt himself, and by others, who have fully endorsed the almost universal success which he claims for the "immediate dilatation," or, more correctly, *splitting* of the stricture. The chief, if not the only reason, I believe, why it has not been more generally adopted in India, is, that it requires a special instrument for its performance; and it is impossible for Medical officers in this country, liable to be moved at a moment's notice from station to station, to supply themselves with every new invention which is favorably mentioned. This difficulty will now exist no longer in respect to this particular instrument, as it is procurable at the Medical stores, and the preceding cases may help to keep the new plan in view.

There is sufficient variety in the foregoing cases to show that this method is applicable to almost, if not to, every form of stricture which may be met with, when an instrument can be introduced at all. The effects, even compared with those sometimes following the simple introduction of a catheter, are almost *nil*, and the irritability and spasm, which may have existed before the operation, seem to be destroyed by it. The question still remains whether there will exist the same tendency to recurrence of stricture, as after gradual dilatation, incision, &c. A larger experience is probably required to decide this point, though, in two of the foregoing cases, a sufficient time has elapsed to augur well for the permanent success of Mr. Holt's method; but as at least temporary relief is afforded with such facility, and without danger, it is comparatively unimportant to determine if the cure be altogether permanent. Once effectually relieved, the patient can always have recourse to the same means to prevent the stricture closing again to any inconvenient degree, and the occasional use of a catheter would probably obviate this necessity in all cases.

No. 6.—*Report of the Post-Mortem Examination of the body of a Woman brought to the Civil Dispensary, Berhampore, for examination as to the cause of death,* April 26th, 1866. By F. L. CLEMENTSON, ESQ., Surgeon-Major, 11th Regiment N. I.

THE post-mortem examination disclosed the following facts.

1. The body presented the appearances usual when decomposition has been going on for several hours, the fœtor arising from it was horrible, the features were so swelled and distorted that it would not have been easy for those who knew them best to recognize them; the greater part of the body was, besides being greatly swollen, covered with bullæ.

2. On the table of the dead-house (where the examination was made) was a fœtus of from 4 to 5 months old, connected by the funis with the placenta which was still retained in the vagina. When the body was laid on the table, the fœtus was in utero, but had been expelled by the force of the gases evolved by the advancing decomposition.

3. Neither stomach nor bowels presented any sign of inflammation or of disease.

4. While removing the stomach and bowels in order that they might be forwarded to the Chemical Examiner at Madras, the end of a stick which had in some way escaped wounding the bowels was found lying close along the front of the spine and reaching nearly as high as the diaphragm.

5. On tracing the stick downwards it was found to have

penetrated and passed through the posterior wall of the uterus at its lower third; the end of the stick was in the upper part of the vagina.

6. The uterus was about 6 or 7 inches long from cervix to fundus, the walls and substance throughout were intensely inflamed, as were the appendages, connecting membranes and cellular tissue about these parts, which were moreover greatly infiltrated.

7. The stick found as above described was wound round with cloth, which no doubt was at the time of its introduction into the vagina and uterus covered with some irritating substance, which experience in this mode of inducing abortion had proved to be efficacious.

8. That the stick was introduced for the purpose of inducing abortion is, from the history of the case, beyond doubt. The woman had, it appears, borne a good character, but her husband had been away from her for three years, she had evidently had improper connexion with some person in his absence, and to cover her frailty, had resorted to some old woman reported to be skilful in procuring abortion; this old hag in pursuing her vocation had thrust the armed stick through the uterus instead of into its cavity, thus instead of destroying the child only, both mother and child were murdered.

No. 7.—*Report of Deaths in Madras, during the First Quarter of* 1866. By W. ARNOLD SMITH, M.D., Officiating Secretary, Sanitary Commission.

THE health of Madras during the first quarter has been on the whole satisfactory. The total number of deaths registered has been 2960, being a slight decrease of 21·1 on that for the corresponding quarters for ten past years, and a decrease of 284·6 for the past five years.

2. The striking difference in the comparison of the deaths of these two periods must be to a great extent attributable to the more accurate way in which the registration of

mortality has been latterly carried out—a fact noticed by Mr. Cornish in his Annual Report for 1861 ; and greater confidence is, therefore, to be placed on the contrasts drawn between the present Returns and those prepared since the year 1860.

3. Taking the population at 450,000, the mortality during the quarter would be at the rate of 26 per mille per annum.

4. Cholera has been far less prevalent during the quarter than it has been for some time past, there having been only 269 deaths from this disease against a mean of 636·6 for the same period for five previous years. During the last two weeks, the number of deaths registered have greatly increased, most of the cases occurring in Triplicane and its neighbourhood.

5. The total mortality from miasmatic disease has been 1542, being 382 deaths less than that for the same period for five years past.

6. The returns of mortality for 1865, which are now being compiled in the office, will also show a very low rate of mortality from miasmatic diseases as contrasted with five previous years; and from charts of mortality which have been constructed, it may be stated that the wave line of deaths from this cause only reaches the mean wave line at one point embracing a period of four consecutive weeks.

7. It cannot be doubted, that much of this decrease is due to many sanitary improvements which have been made in the town of Madras since the date on which these Returns were first compiled, which is an encouragement to further efforts of this kind; for much still remains to be done. The ground of many parts of the Native towns continues saturated with the contents of cess-pools and leaking drains, while poisonous emanations, which generate Typhus, Diarrhœa, Dysentery, and Cholera still abound. The Cooum river is still an open sewer, and teems with pestiferous exhalations and the germs of disease, and it may be safely said that, should an epidemic visit Madras, it will still find its population an unprepared and easy prey.

8. The total deaths from different classes of the population during the quarter are as follows :—

Deaths in Madras, First Quarter of 1866.

	Europeans.		East Indians.		Hindoos.		Mahomedans.		Total.		General total of both sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Miasmatic Diseases.											
Small-pox	...	...	...	...	15	12	...	1	15	13	28
Measles	...	...	...	1	...	...	...	...	...	1	1
Fevers	1	...	1	2	236	251	17	33	255	286	541
Dysentery	...	3	1	...	163	123	22	25	186	151	337
Diarrhœa	1	...	2	7	113	121	12	11	128	139	267
Cholera	4	2	7	6	118	113	37	34	166	155	321
Total...	6	5	11	16	645	620	88	104	750	745	1495
Other Miasmatic diseases	1	..	...	...	15	6	2	2	18	8	26
Total of all other diseases	29	10	23	28	646	487	111	105	809	630	1439
Total...	36	15	34	44	1306	1113	201	211	1577	1383	2960
Mean mortality of ten 1st Quarters from 1856 to 1865.											
Miasmatic diseases	12·9	4·0	17·1	17·1	731·4	661·4	123·2	137·4	884·6	819·9	1704·5
Other diseases	15·6	4·9	17·7	21·4	540·1	481·3	99·2	96·4	672·6	604·0	1276·6
Total...	28·5	8·9	34·8	38·5	1271·5	1142·7	222·4	233·8	1557·2	1423·9	2981·1
Increase or Decrease.											
Increase	13·6		4·7		4·8		...		...		...
Decrease...	...		...		...		44·2		...		21·1

Two Charts accompany this Report; one showing the increment and decrement in mortality from certain diseases of the Miasmatic class, whose origin may perhaps be traced to effects of locality and climate; and the other representing the meteorological condition of Madras for the past quarter—those climatic elements only being exhibited which more probably influence the health of the community. These charts, being constructed in the same form, offer facilities for comparing the mortality with changes of climate, which no figures, however plainly shown, could ever possibly do.

A reference to the Mortality Chart shows, at a glance, the following facts:—

1st.—Throughout the quarter, with the exception of the two last weeks, there has been a marked decrease in the amount of Miasmatic disease, the rise during the two last weeks being due to an increase in the number of cases of Cholera.

2nd.—The number of deaths from Fevers, Diarrhœa, and Dysentery has been above the usual average; but a marked rise took place in all at a period extending over the fifth and sixth weeks.

3rd.—That Small-pox shows a marked decrease on the average number of deaths from this disease for the past five years.

4th.—That, although Madras has never been free from Cholera during the past quarter, yet the mortality from it has been far less than usual for 11 out of the 13 weeks. During the last fortnight a sudden rise has taken place.

A reference to the Meteorological Chart shows—

1st.—That the average atmospheric pressure has been the same as usual, but exhibits a sudden decrease in the 5th and 13th week, the former period corresponding to a change in the wind from N. E. to S. E.

2nd.—That the wind for the 1st, 2nd, 3rd, and 4th weeks has blown from a North-easterly quarter, and after this from a South-easterly one, its velocity being below the usual average for the quarter.

3rd.—That the temperature has been greater than the average during the quarter, more especially during the 5th and 6th weeks.

4th.—That the amount of humidity has been less than the average.

5th.—That the rain fall is below the average.

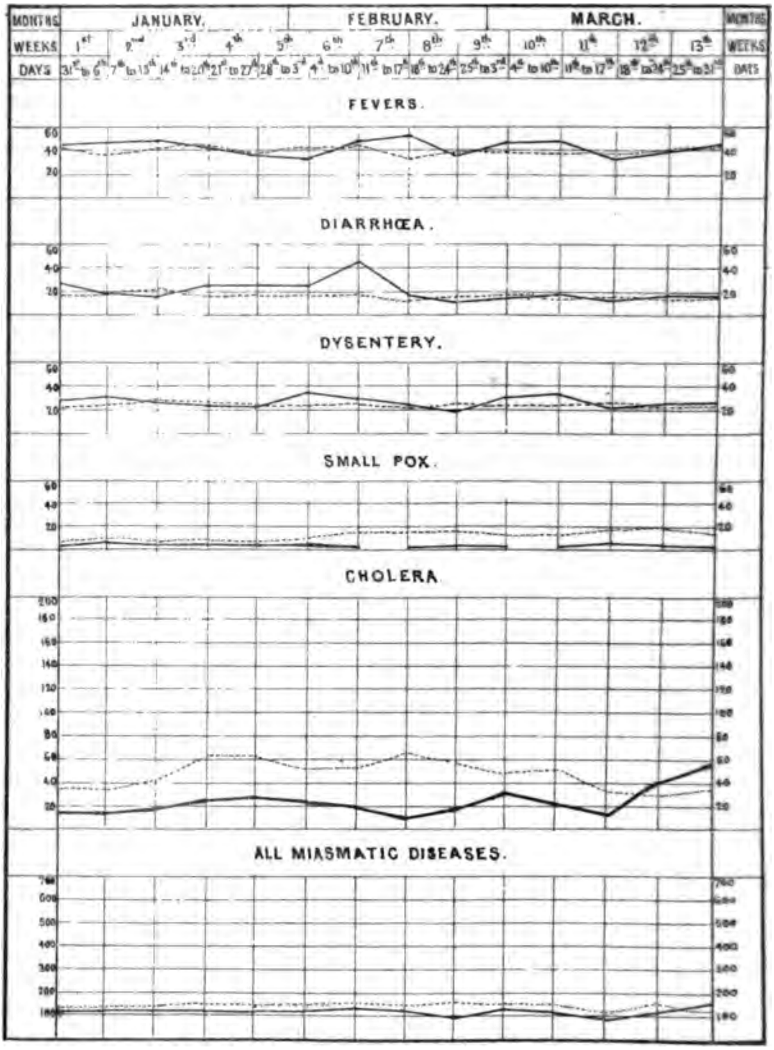
In contrasting the mortality and meteorological charts, nothing very particular can be traced between the wave line of deaths and climate till the 5th week, when certain marked meteorological changes occur, viz., the wind passes from a North-easterly to a South-easterly direction, with a marked decrease in atmospheric pressure, and a sudden ascent in the temperature. At this period a rise takes place in the deaths from Fevers, Diarrhœa and Dysentery, which continues through the following week and falls with a decrease in the temperature.

No connection can be traced between the wave line of Cholera and any meteorological element, but it is worthy of remark that at the time the mortality increased during the fifth week from Fevers, Dysentery and Diarrhœa, a steady decrease took place in the deaths from this disease. The Cholera Commission in Bengal notice that when Cholera is at its minimum, the number of deaths from Dysentery and Diarrhœa amongst Europeans reaches its maximum, and that at these times the deaths from all diseases amongst Natives also reached their maximum.

In pointing out these facts, it should be stated that no conclusions drawn from them can have any decided foundation until comparisons between climate and disease have been extended over a series of years. Up to the present time this subject has been almost entirely neglected in India. In forwarding the report of deaths in Madras for 1865, it is intended to show the wave line of mortality from the same miasmatic diseases for the six past years, as contrasted with meteorological causes, should such a plan meet with the approval of Government.

DIAGRAM SHOWING THE MORTALITY FROM MIASMATIC DISEASE IN MADRAS,

DURING THE 1ST QUARTER_1866.

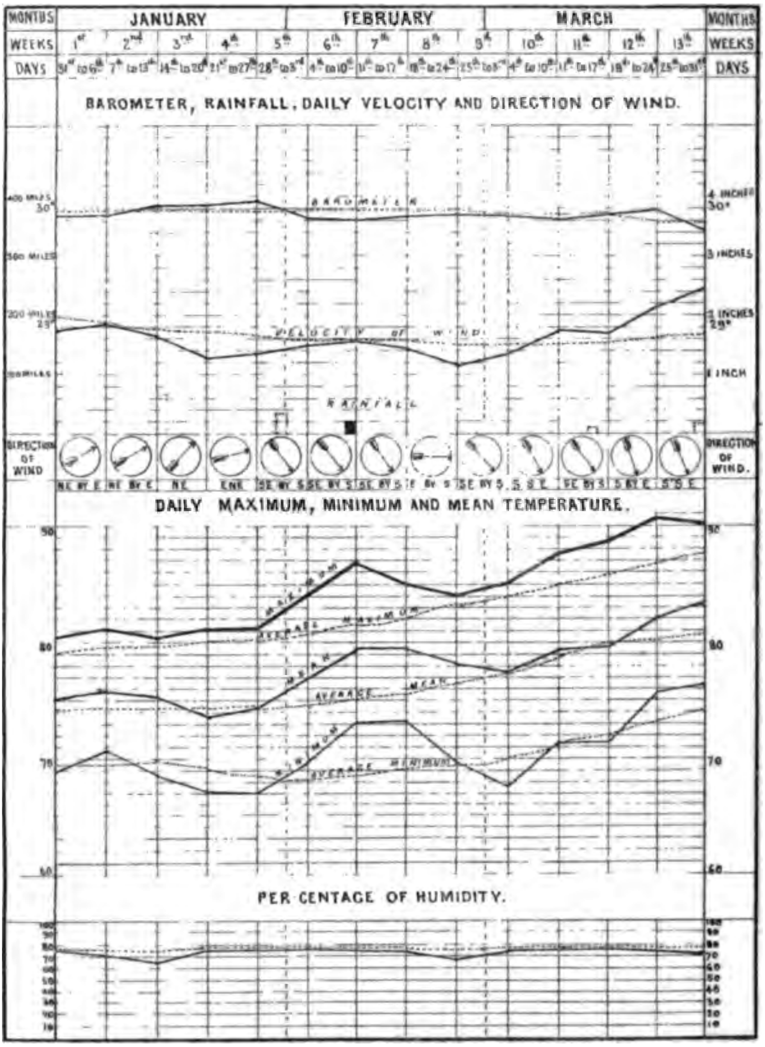


N.B. The total Mortality from each disease during each week is plotted on the perpendicular lines which represent these periods. The horizontal dotted wave lines show the average mortality from each disease for the previous five years.

Alexr Barren Lith. Madras 1866

Madras Quart. Journ. of Medical Science

DIAGRAM SHOWING THE METEOROLOGICAL CONDITION OF MADRAS,
DURING THE 1ST QUARTER – 1866.



N. B. The mean weekly Meteorological elements are plotted on the perpendicular lines. The dotted wave lines show the bi-monthly average for twenty years from observations kept at the Madras Observatory.

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Comparative table showing the mortality from Miasmatic diseases in the last thirteen weeks, as shown upon the accompanying diagram.

	Jan. 6th.	Jan. 13th.	Jan. 20th.	Jan. 27th.	Feb. 3rd.	Feb. 10th.	Feb. 17th.	Feb· 24th.	Mar. 3rd.	Mar. 10th.	Mar. 17th.	Mar. 24th.	Mar. 31st.	Total.
Fevers	46	50	43	35	31	46	52	38	44	46	36	39	45	551
Diarrhœa	19	18	23	25	26	43	19	12	17	19	12	19	18	270
Dysentery	31	24	22	21	32	30	24	19	30	33	23	25	28	342
Small Pox	4	1	2	1	4	2	...	1	2	...	4	3	4	28
Cholera	14	18	24	30	25	20	10	19	29	24	15	41	55	324
Other Miasmatic Diseases	2	1	2	2	2	2	3	2	3	3	3	..	2	27

Average of the corresponding weeks for five previous years.

	Jan. 6th.	Jan. 13th.	Jan. 20th.	Jan. 27th.	Feb. 3rd.	Feb. 10th.	Feb. 17th.	Feb· 24th.	Mar. 3rd.	Mar. 10th.	Mar. 17th.	Mar. 24th.	Mar. 31st.	Total.
Fevers	39·0	41·8	44·2	36·6	42·0	44·6	38·2	39·4	40·2	39·0	38·8	40·2	41·6	525·6
Diarrhœa	19·4	21·2	18·4	17·6	18·4	17·4	16·0	16·6	18·4	15·8	15·4	18·4	15·8	228·8
Dysentery	25·4	23·8	25·4	24·8	25·0	26·2	20·8	24·0	22·8	23·4	23·0	23·4	21·8	309·8
Small Pox	5·8	7·0	10·6	8·4	8·6	16·2	17·8	17·6	15·4	16·8	21·0	22·0	17·8	185·0
Cholera	36·6	41·2	64·0	63·0	56·6	56·8	63·0	59·6	51·0	50·6	31·6	30·2	32·4	636·6
Other Miasmatic Diseases	3·2	2·8	1·6	2·6	2·0	3·0	3·0	2·2	3·6	3·4	3·2	3·8	4·4	38·2

Mean Meteorological observations for the past thirteen weeks.

	Jan. 6th.	Jan. 13th.	Jan. 20th.	Jan. 27th.	Feb. 3rd.	Feb. 10th.	Feb. 17th.	Feb· 24th.	Mar. 3rd.	Mar. 10th.	Mar. 17th.	Mar. 24th.	Mar. 31st.	Total.
Barometer reduced to 32° F.	29·984	30·040	30·044	30·078	29·947	29·913	9·951	9·951	29·927	29·907	29·95	29·99	29·84	29·963
Mean Maximum Temperature	81·4	80 6	81·4	81·4	83·9	87·04	85·02	84·01	85·04	87·8	88·8	90·3	90·6	85·17
Do. Minimum do.	70·7	68·6	67·3	67·02	69·7	73·10	73·20	69·80	67·7	71·3	71·3	75·4	76·0	70·85
Mean Temperature	75·9	75·6	73·9	74·5	77·1	79·6	79·5	77·2	76·4	79·7	79·9	82·1	83·2	78·04
Do. Humidity	71·2	68·4	76·8	75·1	78·7	76·7	73 2	68·2	73·0	75·7	76·8	77·0	74·3	74·23
Prevailing Wind	N. E. by E.	N. E. by E.	N. E.	E. N. E.	S. E. by S.	S. E. by S.	S. E. by S.	E. by S.	S. E. by S.	S. S. E.	S. E. by S.	S. by E.	S. S. E	
Mean Velocity in miles	174·1	152·4	110·1	117·5	131·0	136·7	125·1	98·5	116·2	154·7	148·5	194·4	221·0	144·6
Rain fall	...	...	...	...	...	0·03	...	...	...	...	...	..	...	0·002

No. 8.—*Madras Mortuary Report, for the Second Quarter of* 1866. By Hon'ble R. S. Ellis, C. B., Sanitary Commissioner.

1. The health of Madras has not been so satisfactory during the past quarter as during the one which preceded it. The total number of deaths registered has been 2,926, which, contrasted with the average of corresponding quarters for ten previous years, shows an increase of 404 deaths.

The average number of deaths during the second quarter of five previous years, as shown in the margin, is 2,783, thus giving an increase in the mortality during the period under review of 143, and an increase of 607 over the same period for 1865.

1861	2,967
1862	3,260
1863	2,949
1864	2,422
1865	2,319
Mean	2,783

2. The second quarter is usually the healthiest season in Madras, but this year, there is but a very slight difference between it and the first, as the number of deaths registered is only 34 less.

This is more a matter of surprise as the quarter immediately preceding it is one of the two most unhealthy periods of the year in Madras.

3. The deaths from Miasmatic diseases have amounted to 1,469, or a little more than half the total number registered, showing an increase on the average of the past five years of 13 deaths and a decrease of 52 on the first quarter.

4. The following table shows the total number of deaths registered amongst the different classes of the population.

	Europeans		East Indians.		Hindoos.		Mahomedans.		Total.		General Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Fevers...	2	1	8	1	240	251	21	29	271	282	553
Diarrhœa	...	1	2	4	99	103	9	7	110	115	225
Dysentery	2	...	2	1	116	138	17	11	137	150	287
Small-pox	...	...	...	...	17	17	...	...	17	17	34
Cholera	2	1	1	7	153	118	17	21	173	147	320
Other Miasmatic diseases	1	...	3	1	24	14	4	3	32	18	50
Total Miasmatic...	7	3	16	14	649	641	68	71	740	729	1469
Total of all other diseases	17	12	17	28	633	517	108	125	775	682	1457
Total...	24	15	33	42	1282	1158	176	196	1515	1411	2926
Mean Mortality of 10 *Second Quarters, from* 1856 *to* 1865.											
Miasmatic diseases	8·8	2·9	14·0	13·8	554·6	515·9	72·5	74·4	649·9	607·0	1256·9
Other diseases	16·8	5·3	21·1	20·4	526·1	468·2	103·4	103·5	667·4	597·4	1264·8
Total...	25·6	8·2	35·1	34·2	1080·7	984·1	175·9	177·9	1317·3	1204·4	2521·7
Increase	5·2		5·7		375·2		18·2		404·3		
Decrease	...		...		...		...		...		...

5. From the above it appears that the deaths from Miasmatic diseases have increased during the past quarter on the previous ten years by 212, and from all other diseases by 192; but taking only the last five years into consideration (which period is most to be relied on) it is seen that out of the 143 total number of deaths which have increased on the average for this period, only 13 have been due to Miasmatic diseases, leaving 130 to be accounted for by other causes.

6. Unfortunately from the way in which the register has been hitherto kept, it is not possible without a great deal of time and labor to show exactly the different diseases which have made up this increased death-rate, but from a comparison of the register with those which have been kept during past years, it may be stated there has been an increase amongst local classes of disease, especially nervous disorders. Young children appear to have suffered largely from convulsion.

7. An examination of the accompanying diagram will show, far better than can be described, the course taken by the diseases which have made up more than half the total number of deaths during the past quarter; comparisons can also be made with the average death-rates and the Meteorological phenomena of the hot season.

8. FEVERS.—The mortality from the diseases registered under this head has been 553, or 23 more than the average. During April it is seen that the deaths were below the five years' wave line, but from the 1st week in May till the middle of June, they are considerably above it. During the last two weeks of the quarter they begin to decrease.

9. DIARRHŒA.—The number of deaths registered from this cause amounts to 225, being an increase of 12 on the average for five years. The only disturbance in the wave line of this disease, which runs tolerably equally with that of the other, occurs in the week ending the 21st June, when a sudden rise takes place and as sudden a fall during the following weeks.

10. DYSENTERY.—The number of deaths during the quarter amounts to 287, being 17 above the average. During the first part of the period, the deaths were below the average, but during the latter half they rise considerably

above it. It is observed that there is no correspondence between the wave line of this and the former disease.

11. Small Pox.—The number of deaths registered has been 34 against an average of 126 deaths. This continued and striking difference in the deaths from this disease as compared with former periods speaks of itself for the prophylactic advantages derived from vaccination, which has of late been so actively carried on in Madras. It is to be observed that the only deaths which have occurred are amongst Hindoos, a race prejudiced by religious ideas against the operation. Out of 28 deaths which occurred during the first quarter, 27 were of this class, and as will be shown in the Annual Mortuary Report for 1865, (now passing through the press) out of a total of 44 deaths during the year, 41 were Hindoos. The almost total cessation of deaths from this disease amongst all classes, but this one, should overcome, if any thing can, the prejudices imbibed by religious superstitions.

12. Cholera.—The number of deaths registered from this disease has been 320 or 36 more than the five years average. A glance at the Chart shows that it has never once been absent from Madras, and that its increment and decrement have been erratic as compared with the average wave line. On the last week of the first quarter, the deaths rise to 55. At the commencement of the second, the wave line falls steadily throughout April till the middle of May, when it reaches its minimum in the 5th week ending May 5th. At this time only 8 deaths were registered. A sudden rise then occurs extending from the 6th week to the 8th, a maximum of 31 being reached during the week ending May 19th. During this outbreak 64 deaths were registered; the cases chiefly occurring in Royapooram and the neighbouring districts of the 7th division.

A steady rise in the mortality again takes place from the week ending June 9th, till the 12th week ending the 23rd of June, when the maximum number of deaths 50, is reached. This is the largest number that has occurred in any one week of the quarter. During the five weeks over which this outbreak extended, 169 deaths were registered, the cases being chiefly confined to Peddoo Naick's Pettah.

13. The season has been remarkable for the very high temperature which has existed at certain times. Not only has the mean temperature been far above the average for

the past twenty years, but the past quarter is distinguished as being one in which has occurred, the hottest day on record. This excessive heat has doubtless been due to the almost entire absence of any rain fall; and, as might be expected, these extraordinary meteorological conditions have exercised a very marked influence on the death rate of the town of Madras as well as other parts of the Presidency. These peculiarities will be better understood by a reference to the Chart.

14. ATMOSPHERIC PRESSURE.—This element has averaged during the quarter 29·745 reduced to 32° F., being ·01 lower than the average. A rapid descent in the Barometer is noticed during the weeks ending the 5th and 12th of May.

15. TEMPERATURE.—The temperature during the past quarter has been excessive as has just been stated, and more especially so during the period commencing with the last week in May and ending with the 2nd week in June. At this time both the days and nights were very oppressive and trying to all classes.

The average mean temperature has been 88·8° F. or 3·7° F., hotter than the same period for twenty years previous. The excess is shown by the wave lines on the diagram.

The line of temperature rises steadily during the first two weeks of the quarter, and with the exception of a slight fall during the last half of April and a sudden dip during the week ending the 26th May, the thermometer continued to rise till the middle of June, when, during the week ending June 9th, the average daily maximum registered 106° F. in the shade.

On the 28th of May the thermometer stood at 110·6° in the shade, and the Government Astronomer remarks that this "was the hottest and dryest day on record at Madras.

"The wet bulb thermometer read 35·8 below the standard at 4 P. M., and the quantity of moisture in the air was only 16 per cent. of that required to saturate the atmosphere and produce rain. The thermometer reached above 106° F. on six days during the half month, (May) the average maximum of past years being only 95° F. The greatest reading of a black bulb in vacuo was 155° F., on the 19th."

16. HUMIDITY.—The percentage of Humidity has been 63 during the quarter, which is 7 degrees below the average; as will be observed from the Chart; the excessive dryness of the air existed chiefly during May and June.

17. RAINFALL.—The rainfall has been very far below the average, having amounted to only ·286 inches during the quarter, and only ·316 since the 1st of January. The average rainfall up to the present time is 7·64 inches, of which 5·16 inches should fall during the 2nd quarter. As it is, there is a deficiency of 6·35 inches this year.

18. VELOCITY AND DIRECTION OF WIND.—During the first five weeks of the quarter the prevailing wind was from the S.S.E. During May it was S., and for the last three weeks it has blown from a westerly quarter. Throughout the quarter, its velocity has been very high, compared with former years, and on several occasions these high winds have been accompanied by dust storms.

The average daily velocity has been 235 miles or 30 *more than the usual average.*

19. As before stated, the increased mortality of the present quarter must be to a certain extent attributable directly and indirectly to a season of such an exceptional character, and although this increase is not due to the class of diseases which have been shown in the diagram, there are still a few points of interest which may be briefly noticed in comparing these meteorological and sickness charts. Before doing so, however, it may be remembered that although the meteorological conditions which have existed during the past quarter, such as extreme heat, low percentage of humidity, Southerly and South Easterly winds with increased velocity, *alias* ventilating powers, are such as might be expected to retard the development of miasmatic causes of disease, still the enervating effects of continued high temperature will naturally, in common with all other debilitating causes, render the constitution more liable to miasmatic influences, and thus indirectly increase the death-rate of the population.

20. It is to be observed by a reference to the diagrams, that the wave line of deaths registered as fevers, follows in a most marked manner the wave line of high temperature. It commences to rise above the average during the 5th week of the quarter, describes a curve, the highest part of which

passes through the 6th week, and falls lowest in the 8th. It again rises in the following weeks (9th and 10th) and falls through the 11th and 12th. Almost precisely the same curve is taken by the wave line of high temperature.

21. A sudden ascent takes place in the temperature during the 9th week with a fall in the humidity of the air; an equally sudden rise in the deaths by diarrhœa takes place. At this same period, a fall takes place in the deaths from dysentery. Singularly the curve of deaths from the latter disease takes an almost opposite course to that showing the deaths from diarrhœa.

22. On the wind shifting from a Southerly to a Westerly quarter, the deaths from Fevers, Diarrhœa and Dysentery, all fall below the average.

23. During the 1st and 2nd weeks of the quarter in which the first rise in temperature occurs, there were two deaths from apoplexy. During the 6th and 7th weeks of the quarter in which a rapid rise in the temperature takes place, there were 2 deaths from sun stroke and 5 from apoplexy registered. Of the former one was a European and the other a Mahomedan. Of the latter two were Europeans, one an East Indian, and two were Hindoos.

24. In the hottest part of the quarter extending over the 9th, 10th, and 11th weeks, two deaths from sun stroke and four from apoplexy occurred. The former were two Hindoos. Of the latter two were Europeans, one an East Indian, and one a Hindoo.

During the quarter, therefore, four sun strokes have occurred, and eleven deaths from apoplexy due to the excessive heat of the weather.

Table showing the mortality from **Miasmatic Diseases** *in the last thirteen Weeks as illustrated by the accompanying Diagram.*

	April 7	April 14	April 21	April 28	May 5	May 12	May 19	May 26	June 2	June 9	June 16	June 23	June 30	Total.
Fevers	37	40	40	38	42	53	50	42	47	49	41	37	37	553
Diarrhœa	17	20	17	16	18	20	18	15	25	18	11	16	14	225
Dysentery	21	24	23	18	21	24	23	28	18	27	26	18	16	287
Small Pox	5	1	2	5	5	3	4	2	2	2	0	2	1	34
Cholera	33	18	20	9	8	22	31	11	13	24	38	50	43	320
Other Miasmatic Diseases	2	2	4	4	3	5	6	3	6	4	5	4	2	50
	115	105	106	90	97	127	132	101	111	124	121	127	113	1469

Average of the Corresponding **Weeks** *for* 5 *previous Years.*

Fevers	38·2	40·8	40·8	39·6	42·6	40·0	41·4	39·0	40·8	39·0	43·2	41·6	43·8	530·8
Diarrhœa	17·2	14·0	17·8	15·6	17·8	17·6	18·8	14·2	15·6	16·2	14·6	15·6	18·8	213·8
Dysentery	21·0	24·0	23·0	23·6	20·2	21·4	22·4	19·4	22·0	17·6	.5·8	19·0	21·2	270·6
Small Pox	16·6	15·8	15·6	11·0	12·0	10·4	8·2	8·4	7·0	4·8	5·8	5·2	5·6	126·4
Cholera	24·4	23·4	20·6	22·6	22·6	23·4	21·2	19·9	16·0	20·2	18·6	14.8	17·0	264·7
Other Miasmatic Diseases	6·4	4·4	5·0	5·4	3·2	4·0	2·8	3·4	2·4	4·0	2·6	3·4	3·4	50·4
	123·8	122·4	122·8	117·8	118·4	116·8	114·8	104·3	103·8	101·8	100·6	99·6	109·8	1456·7

Mean Meteorological Observations for the past 13 Weeks.

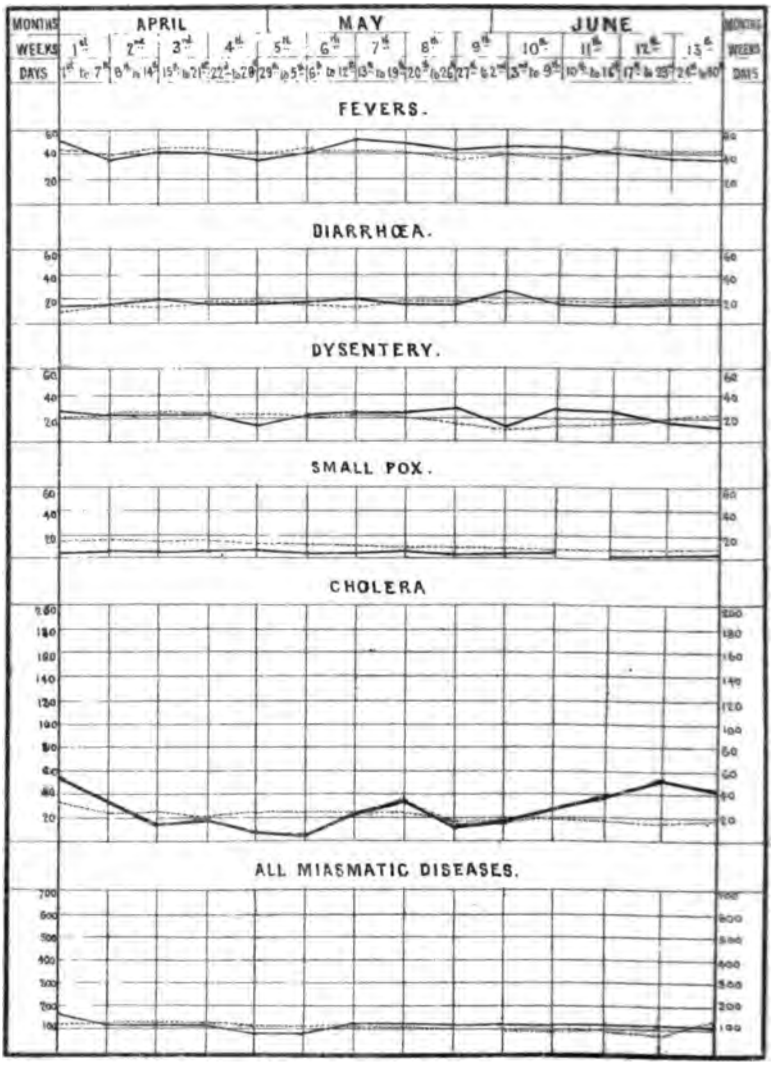
	April 7	April 14	April 21	April 28	May 5	May 12	May 19	May 26	June 2	June 9	June 16	June 23	June 30	Average.
Barometer reduced to 32° F	29·821	29·787	2984·4	29·894	29·782	29·684	29·713	29·701	29·681	29·706	29·649	29·701	29·734	29·745
Mean Maximum temperature	91·3	94·9	93·6	93·2	95·3	101·8	102·1	97·6	105·5	106·05	102·4	99·1	101·7	98·81
do Minimum do	77·9	79·6	79·6	80·3	80·1	82·4	82·5	82·7	83·6	84·05	84·1	82·4	83·6	81·77
Mean Temperature....... ...	84·4	86·3	85·8	86·3	86·8	90·3	89·5	89·2	91·9	91·1	90·6	88·4	90·08	88·51
Mean Humidity............. ...	74·8	71·0	72·8	73·7	71·7	61·5	63·7	68·0	56·7	55·8	48·5	55·5	51·5	63·4
Prevailing Wind..........	S. E.	S.S. E.	S.S. E.	S.S.E.	S.S.E.	S.	S.	S.	S.S.W.	S.	W.	WSW	W by S	S.
Mean Velocity in Miles... ...	192·2	253·2	249·4	191·1	167·4	261·2	299·5	253·1	246·1	268·5	336·0	306·2	310·5	256·4
Rain fall	2	0	0	0	0·08	0	0	0	0	0	001·6	0·16	0·03	0·286

Table showing the mean half Monthly Meteorological condition of Madras for 20 years past.

	Half month ending 15th April.	Half month ending 30th April.	Half month ending 15th May.	Half month ending 31st May.	Half month ending 15th June.	Half month ending 30th June.	TOTAL.
Barometer reduced to 32°F.........	29·843	29·806	29·756	29·707	29·692	29·704	29·751
Mean Maximum Temperature.....	90·0	91·0	93·0	95·1	95·8	93·7	93·1
Do. Minimum do	77·4	78·4	79·8	80·4	80·7	79·4	79·3
Mean Temperature.....................	83·1	84·0	85·3	86·2	86·6	85·0	85·03
Mean Humidity........................	76·	75·	73·	68	64·	67·	70·5
Prevailing Wind.................... ..	S. by E.	S. by E.	S.	S.S.W.	S. W.	S. W.	S. W.
Mean Velocity in Miles	173	175	201	218	230	235	205
Rain fall................................	0·16	0·65	1·32	1·60	0·02	0·51	5·16

Madras Quart. Jour of Medical Science

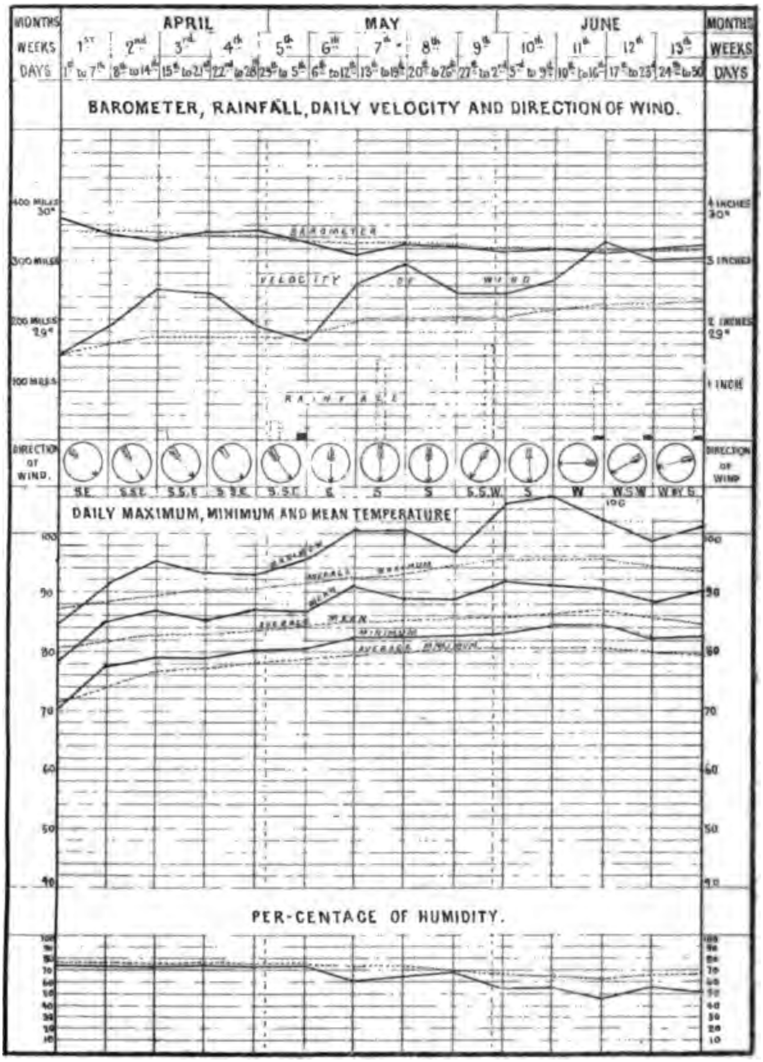
DIAGRAM SHOWING THE MORTALITY FROM MIASMATIC DISEASE IN MADRAS,
DURING THE 2ND QUARTER_1866.



N.B. The total Mortality from each disease, during each week is plotted on the perpendicular lines which represent these periods. The horizontal dotted wave lines show the average mortality from each disease for the previous five years.

Alexʳ Barren. Lith Madras 1866

DIAGRAM SHOWING THE METEOROLOGICAL CONDITION OF MADRAS, DURING THE 2ND QUARTER _ 1866.



N.B. The mean weekly Meteorological elements are plotted on the perpendicular lines. The dotted wave lines show the bimonthly average for twenty years from observations kept at the Madras Observatory.

Alexr. Barron Lith Madras 1866.

ETEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of April,* 1866.

to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed extremes.		Daily means.						
	Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
ches.	°	°	°	°	per cent.		Mls.	Ins.	
·817	90·2	77·6	84·0	78·8	76	S. E.	246	......	Fine.
·842	91·0	77·9	84·7	78·1	75	S. E.	205	......	Passing clouds.
·801	91·4	79·7	85·2	78·3	74	S. E.	220	......	Do.
·817	90·8	79·4	84·9	77·2	71	S. E.	169	......	Light clouds.
·842	91·3	79·8	84·8	77·8	74	S. E.	172	......	Chiefly fine.
·829	90·5	76·1	83·3	77·4	77	S.E.by S.	158	......	Fine.
·768	94·3	76·4	84·1	77·9	75	S. S. E.	208	......	Do.
·768	93·5	78·1	86·2	76·9	66	S. S. E.	229	......	Hazy.
·802	93·8	80·8	86·3	78·9	73	S. S. E.	253	......	Passing clouds.
·789	95·6	79·8	86·4	78·8	72	S. by E.	268	......	Light haze.
·756	97·6	78·3	85·9	77·6	69	S. by E.	267	......	Do.
·742	94·6	80·7	86·8	79·1	72	S. by E.	252	......	Fine.
·819	95·3	81·1	86·7	78·9	72	S. S. E.	266	......	Do.
·836	94·4	79·0	85·9	78·7	73	S. S. E.	238	......	Do.
·804	93·1	78·6	85·5	78·9	75	S. S. E.	257	......	Do.
·801	95·4	79·9	85·9	78·1	71	S. S. E.	276	......	Fine.
·846	93·9	78·9	85·5	77·2	69	S. S. E.	238	......	Chiefly fine.
·859	91·8	77·2	84·6	78·2	76	S.E.by S.	226	......	Do.
·846	93·5	79·8	86·2	79·0	73	S. S. E.	245	......	Fine with passing clouds.
·860	91·3	82·0	86·6	79·1	72	S. S. E.	268	......	Occasionally cloudy.
·892	93·7	80·8	86·4	79·3	74	S.E. by S.	236	......	Cloudy before sunrise: fine
·927	92·8	79·7	86·6	79·8	75	S. E.	188	......	Do. do. [after.
·928	93·7	81·1	86·4	79·6	75	S. E.	153	......	Cloudy before sunrise: fine
·919	93·4	81·6	86·4	78·6	72	S. S. E.	185	......	Light clouds. [after.
·871	93·7	80·4	86·3	78·9	73	S.E.by S.	201	......	Slowly passing clouds.
·861	93·0	81·1	86·7	79·0	72	S. S. E.	224	......	Light passing clouds.
·883	93·4	79·6	86·3	79·3	74	S. S. E.	194	......	Chiefly fine.
·874	92·9	79·2	85·9	79·1	75	S. S. E.	193	......	Do.
·854	92·6	76·9	86·1	79·2	74	S. S. E.	206	......	Do.
·830	93·1	79·0	86·4	78·6	72	S.E.by S.	173	...	Light hazy clouds.

Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 1 P.M.. Daily Means are obtained by the application of hourly corrections, deduced from, years' observations. The Cistern of the Barometer is 27 feet above the level of the the Receiver of the Rain-gauge is three feet from the ground. The Wind and gistered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

METEOROLOGICAL RESULTS *from the Madras Observato* *Register, for the month of May,* 1866.

May 1866.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REM
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches	°	°	°	°	per cent.		Mls.	Ins.	
1	29·289	92·0	81·8	85·2	79·4	78	S.E. by S	106	0·08	Passing clouds. Sh
2	29·802	93·5	79·1	86·5	78·8	72	S. E.	135	....	Passing clouds. [1
3	29·773	93·1	80·6	85·8	78·1	71	S. E.	87	....	Chiefly fine. A modera
4	29·713	98·1	79·7	87·5	79·8	72	S. S. E.	218	....	Fine. storm abo
5	29·674	104·9	83·9	90·1	79·3	63	S. by W.	247	....	Chiefly fine
6	29·658	104·1	84·4	91·2	79·3	60	S. by W.	305	....	Do.
7	29·656	108·1	79·6	92·2	76·6	50	S. W.	232	....	Fine.
8	29·675	104·2	82·8	91·9	76·8	51	S. by E.	204	....	Do.
9	29·704	104·2	83·4	90·7	80·0	63	S.	230	....	Do.
10	29·717	97·3	81·7	88·8	80·7	71	S. S. E.	277	....	Do.
11	29·706	97·9	83·9	88·6	79·8	69	S.	304	....	Light hazy clouds.
12	29·672	96·9	81·3	89·0	79·6	67	S. by E.	277	....	Fine.
13	29·706	96·7	82·5	88·5	80·7	72	S. by E.	317	....	Do.
14	29·722	98·3	81·7	88·6	79·4	67	S.	288	....	Do.
15	29·724	94·6	81·8	88·8	80·1	69	S.	340	....	Do.
16	29·712	106·9	82·6	89·6	79·3	64	S. by W.	306	......	Do.
17	29·696	101·3	82·8	89·9	79·0	62	S. by E.	323	....	Do.
18	29·727	100·1	83·5	90·0	77·3	57	S.	266	....	Hazy clouds.
19	29·709	106·8	83·2	91·1	77·5	55	S. by W.	257	.....	Fine morning: cloudy
20	29·716	101·2	83·9	91·2	78·0	56	S.	249	.....	Light haze.
21	29·725	94·5	83·5	88·8	81·6	73	S. by E.	290	....	Do.
22	29·710	97·0	81·9	89·0	79·6	67	S. S. E.	227	....	Fine.
23	29·675	96·9	82·5	89·0	80·2	69	S.	208	....	Do.
24	29·671	103·0	82·9	89·2	80·7	69	S.	273	....	Do.
25	29·685	96·0	82·2	89·2	80·2	68	S. by E.	266	....	Do.
26	29·731	95·1	82·3	88·2	81·3	74	S. E. by S	259	....	Hazy.
27	29·723	96·0	82·0	88·9	81·1	72	S. S. E.	231	....	Fine. [day on
28	29·676	110·6	80·8	94·6	77·2	46	S.W by S.	181	....	Light haze. The
29	29·662	106·7	84·8	93·7	78·7	52	S.	217	....	Hazy clouds.
30	29·664	106·4	86·8	92·3	78·6	55	S. S. W.	301	....	Cloudy.
31	29·652	107·0	85·6	91·6	78·8	57	S. S. W.	316	....	Chiefly cloudy.

The Standard Barometer and Thermometers are read at 10 A. M., 4 P. M., and
and the Daily Means are obtained by the application of hourly corrections, dedu
twenty years' observations. The Cistern of the Barometer is 27 feet above the lev
Sea, and the Receiver of the Rain-gauge is three feet from the ground. The W
Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government

ETEOROLOGICAL RESULTS *from the Madras Observatory Register, for the Month of June,* 1866.

to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
	Observed extremes.		Daily means.			Prevailing direction.	Daily velocity.		
	Maxim.	Minim.	Dry.	Wet.					
ies.	°	°	°	°	per cent.		Mls.	Ins.	
592	106·0	84·2	89·9	78·4	60	S. by W.	257	......	Chiefly cloudy.
398	105·8	82·8	92·4	78·9	55	S. by E.	220	.....	Do.
727	109·0	83·6	91·3	78·1	56	S. by W.	282	......	Hazy and cloudy.
727	108·0	85·2	92·5	78·2	53	S.	257	......	Cloudy. [afternoon.
725	107·0	85·0	92·0	77·1	51	S.	285	......	Chiefly fine. Light shower
571	105·3	83·7	91·4	78·0	55	S.	257	......	Chiefly fine. [clouds.
660	104·3	83·6	91·2	78·2	56	S. by E.	274	......	Fine with light passing
704	105·0	83·6	90·1	78·4	60	S. by E.	289	......	Chiefly fine.
731	103·8	83·7	89·8	78·3	60	S.	236	......	Passing clouds.
703	101·9	81·4	90·7	77·7	56	S.	226	......	Light passing clouds.
574	104·8	83·9	88·6	75·8	56	SWbyW.	251	0·01	Cloudy with light showers.
673	102·4	84·9	91·0	75·6	49	W. by S.	332	......	Chiefly overcast.
665	104·6	85·9	88·4	75·8	57	W.S. W.	315	0·03	Cloudy. Shower about 4½ P.M.
618	102·2	83·0	92·5	72·5	38	W.	376	......	Chiefly overcast.
611	100·0	86·0	91·8	73·1	42	W.	409	0·01	Overcast. Shower at 2¾ P. M.
600	101·0	83·8	91·7	73·0	42	W.	443	......	Chiefly overcast.
636	101·0	84·5	87·0	78·1	67	S. W.	270	0·05	Cloudy. Shower at 8½ P. M.
701	98·9	81·4	85·9	77·0	67	S. S. W.	265	0·29	Passing clouds and showers
734	99·1	79·9	85·4	76·2	66	S.W. by S	299	0·14	Passing clouds, shower at 3¾
694	99·5	79·9	89·1	73·4	48	W. S.W.	367	......	Cloudy. [P. M.
668	99·7	83·3	90·9	73·7	45	W. S.W.	312	......	Chiefly overcast.
709	97·8	84·3	90·4	73·8	46	W. S.W.	344	......	Overcast.
770	98·2	84·0	90·2	75·1	50	SW by W	287	......	Cloudy.
747	100·1	84·0	91·0	73·0	43	W.	403	......	Do.
683	102·2	83·3	92·3	74·1	43	W. by S.	391	......	Passing clouds.
691	103·4	83·1	91·1	76·4	52	W. by S.	316	0·03	Chiefly fine. Shower at 9¼
723	102·0	83·6	88·4	76·0	57	S.W. by S	283	......	Hazy clouds [P. M.
760	101·5	83·5	88·4	76·0	57	S. S. W.	276	......	Cloudy.
775	100·5	85·6	90·1	76·2	53	S.	259	......	Fine with passing clouds.
765	102·4	82·6	89·3	76·3	56	S by E.	226	......	Do.

Standard Barometer and Thermometers are read at 10 A. M., 4 P. M., and 10 P. M., aily Means are obtained by the application of hourly corrections, deduced from ears' observations. The Cistern of the Barometer is 27 feet above the level of the the Receiver of the Rain-gauge is three feet from the ground. The Wind and stered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer.

PART IV.

MEDICAL INTELLIGENCE.

Madras Medical College.

Termination of the Session 1865-66.

The Session 1865-66 terminated on the 29th of June, on the evening of which day the Annual Meeting for bestowal of Certificates of Qualification and Prizes was held in the Memorial Hall:—Sir C. H. Scotland, C. J., in the Chair.

During the past year, a change in the College arrangements has taken place, viz:—the division of the nine months' Session into two periods, a Winter Session, extending from 1st October to 30th March, and a Summer Session extending from 1st April to 29th June. This arrangement allowed of a sub-division of some of the Courses of Lectures. Thus, Minor Surgery, formerly incorporated with the Course on Surgery, was separated as a Summer Course. The Course on Diseases of Women and Children was, in the same way, detached from the Midwifery Course. The Lectures on Organic Chemistry were likewise made a Summer Course, those on Inorganic Chemistry being delivered during the Winter Session. And, in order to meet the requirements of the Madras University, a course on Comparative Anatomy was delivered in the College for the first time.

At the Meeting, the Principal's Annual Report (which we hope to be able to publish in our next number), was first read; the Prizes and Certificates of Qualification were then distributed by the Chairman to the successful Competitors; after which the following Valedictory Address was delivered by Dr. Bidie, Professor of Botany, Materia Medica and Therapeutics.

Dr. Bidie's Valedictory Address.

Gentlemen and Students,—The Annual Course in the Medical College being at an end, I have, at the request of the Principal, to offer a few closing remarks, chiefly for the benefit of those who are here as Students for the last time. This day is a momentous one in their lives, as they are now about to enter on the serious business of life, and because a great deal depends on their making a fair start and taking the right turning. There is, I believe, for every life a path, which, if steadfastly pursued, will lead to more or less of success and honour; and there are also tracks, which, if followed, must end in defeat and disgrace. To young men beginning their career, the future generally wears a bright and enticing aspect, and, although I cannot promise that all their hopes will be realized, yet I may safely assure them, that an active, earnest, and upright life will, sooner or later, meet with its reward. I may also assure them that contentment, one of the greatest of earthly blessings, is not entirely dependent upon, or commensurate with success, for he who seeks for that condition in the consciousness of duty well done, may be far happier than the man whose success has surpassed the most ambitious dreams of his youth. The profession to which they have attached themselves is a most humane and honorable one, and its origin an old story, nearly as old as that of disease. Wherever man exists the evils of Pandora's box assail him, and whether consumed by fever, racked by rheumatism, or pierced by cruel iron, he instinctively seeks relief from pain and disease, and shrinks with horror from death. Thus we may infer that the medical art, however crude and imperfect, originated in the very earliest stages of society, and on opening the pages of history, we learn that it was cultivated in very remote times, and had an amount of attention devoted to it that was not given to any other art. As civilization advanced, it rapidly became developed, fundamental truths, like diamonds, being freed from incrusting error, and barbarous appliances and implements supplanted by others of a more humane and rational character. Such progress was a necessary consequence of increased mental culture, accumulating discovery and advancement in cognate arts and sciences, and to have stood still would have involved extinction. Indeed, the facts of the art of medicine having existed for so many centuries, of its having stood so many shocks and trials, and advanced *pari passu* with other sciences, are strong proofs of its being based on truth. But civilization has, in another way, promoted the development of the healing art, namely, by increasing the demands upon its resources. In the earlier stages of society, when the habits and food of a people are simple and natural, their ailments are also, generally speaking, simple and few. Accordingly we find that, in such countries as England, the placid life and plain dietary of past generations freed them from many ailments, which a change of habits has entailed on their descendants. Perfect health, too, like perfect beauty, is quite an ideal condition, a state not attainable by any hygienic means, and as soon as we think that we have, by our skill, banished one fell disease and destroyer of the race, another starts up to take its place. Thus the medical art can never be spared, or become stationary, while man continues to live and labour as he has been doing.

Medicine naturally divides itself into two branches, viz.: CURATIVE and PREVENTATIVE. The former division is the one that would first receive attention, as uncultivated man cares more for the present than the future, and does not seek to anticipate evils, although ready enough to solicit relief from them when they arise. Thereafter, although modified by advancing civilization, the same natural causes would continue to stimulate the development of curative medicine, and in course of time it attained such proportions, as led it to be regarded as the entire art. No doubt reflective minds had occasional glimmerings of the *terra incognita* that lay in another direction, but until recent times no one had the boldness to explore it; and, truly, it requires the intellect of genius and the courage of a hero, to develope a new, or elevate a neglected art or science. Hence preventative medicine, or Hygiene, is of recent origin as an art; but, looking at the progress it has already made, its capabilities, and the necessities of the age, there cannot be a doubt that it will soon be quite as extensive, and be regarded as far more important than its elder sister. In saying thus much it is by no means intended to depreciate curative medicine, ever the good Samaritan to suffering humanity, but it seems inevitable that it will eventually prove less satisfactory than Hygiene because it deals with individuals rather than large bodies of men, and combats effects rather than causes. With tender care and sympathy curative medicine hastens to the relief of man when he becomes the victim of disease, but takes no cognizance of him when he has risen from the bed of sickness and gone forth to his labour. Hygiene, on the other hand, a feeble type of the Divine care, taking up man at his birth, watches over him through life, noticing every agent that can affect his health or comfort, and using every means to promote vigour of mind and body, and render death more remote. Grand aims these, and worthy of the respect and attention of all men; and yet Hygiene has hitherto had to fight a hard battle for very existence, and often to bear the mortification of finding its labours and teachings treated with neglect or contempt! Hygiene is not a distinct science like chemistry, zoology, or the like, but an art, consisting of principles deduced from physiology, curative medicine, meteorology, geology, chemistry, and other sciences. It finds man a prey to numberless diseases, and having learned from the physician the causes of these, it seeks by the practical application of other sciences to frame rules that will either destroy such causes, or enable man to resist their evil influences.

Now, on looking at man as an individual or in masses, there will be found certain general agents that affect his health for better or for worse, and exert a notable influence on the development or arrest of disease. These are *water, air, heat, food, soil, occupation, habits, social relations, exercise of mind and body, and moral discipline.* With these, then, Hygiene has to deal, and it endeavours so to guide man, as that all of them shall be conducive to health and vigor of body and mind. Now, although it might be supposed that it would be a very easy matter, to persuade men to conform to rules that would promote their own health and that of their offspring and neighbours, practically it has proved a most difficult and thankless task. Man, generally speaking, is so much the slave of appetite, that he stoutly resists any interference with his food or drink, so much wedded to pernicious habits, that he will not believe they are wrong, and, alas! so often swayed by evil passions, that he will peril his very existence for their gratification. Again, as a member of the community, he is often so intensely selfish or reckless, as to do things that may be convenient or profitable to himself, although they are repugnant to the feelings and obnoxious to the welfare of others. Thus, in every large town you will find individuals who keep their premises in such a filthy state as to render them a nuisance and source of disease to all in the neighbourhood, while others practise some art or calling highly offensive and most prejudicial to the public health. In such cases it becomes the duty of the public authorities to interfere, and it is gratifying to know that Government has become fully alive to its responsibility in this respect, and is sparing neither pains nor expense to protect and promote the health of the people.

And now, if we consider for a little the life and habits of our native fellow-subjects, we will find that but very little attention is paid by them to the rules of Hygiene. This much, however, must be said in extenuation, that they more frequently err from ignorance than intent. What, for instance, does the poor villager, remote from the centres of European light and civilization, know of the laws of health? Nature and a stern religious code have taught him that frequent ablutions of his sun-baked, sweat-stained body are good and necessary, but these washings may be said to constitute all that he knows or cares about sanitary measures. Of the benefits resulting from abundant supplies of pure air and water he is utterly ignorant, and as to food he often finds it so difficult to fill a large and craving stomach, that he is more anxious about quantity than quality. Taking native houses as a whole, they may be characterized as dark, badly-ventilated and dirty, so that the inmates live constantly in a vitiated close atmosphere, and are deprived of the healthy stimulus of light. To make bad worse, it is no uncommon thing in Mofussil villages to find cattle, during the night, tied up in one end of the ryot's cottage, and pits situated within a few feet of the back-door, kept open for months for the reception of ordure. It is also a common practice to have a dung heap attached to each house, which is very carelessly kept, and by its fœtid emanations, poisons the surrounding air from January to December. Time, however, would fail me were I to enter into all the nuisances of a native village, and show how, by crowded houses and defective drainage, the unfortunate inhabitants live in an atmosphere surcharged with deleterious gases.

Then as to the water supply: nothing can be of greater importance in a tropical climate, both for animal and vegetable life, than abundance of water. Indeed, I hardly know anything more cheering and refreshing after weeks of travel over dusty roads than the sight and sound of a noble river rushing over its pebbly bed; and as I have seen the sepoys on such occasions rushing into the water, shouting with joy the name of the tutelary god, I began to understand how the human mind, without the guidance of Divine truth, might be led to deify so glorious and beneficent an object as the tropical river,—

"for there"
"A pious heart's first impulse would be prayer."

Unfortunately, however, rivers and streams are of rare occurrence in the plains of India, and so the water supply is chiefly drawn from tanks and wells filled by the periodical rain-fall. From various causes, such as the decay of plants, bathing, and the washing of cattle, tank-water is, in general, very impure, and the site of wells is often so badly chosen, that they might rather be denominated cess-pools than reservoirs of wholesome water. The effects of impure air on the system is a subject too extensive for consideration on such an occasion as this, but you are all aware that it has a most deteriorating influence on the bodily powers generally, and is often the exciting cause of disease. The effects of impure water are still more marked than those of impure air, and frequently more sudden in their advent, and when I say that diarrhœa, dysentery, cholera, fever, and various other diseases may be propagated by filthy water, the vast importance of a pure supply will be at once recognized.

I shall now make a brief allusion to the subject of food, as not only does the health but also the character of a people depend, to some extent, on the nature of their food. Of this we have a very good example in India, as the Hindoo, whose diet consists chiefly of farinaceous and oily substances, is, as a rule, much less energetic and courageous than the Mussulman, who indulges freely in animal food. In fact, the diet of the high-caste Hindoo is directly opposed to vigour and activity, inasmuch as it contains but a very limited supply of those elements that enter into the composition of the tissues, which undergo waste by the exercise of the bodily or mental powers; and I question if ever the natives of India can take a high place amongst civilized nations, while they adhere to a dietary so devoid of the all-important *flesh-formers*. Very erroneous ideas as to the food and management of children are also entertained by the native population, and to this may, in some measure, be ascribed the large mortality that prevails amongst their offspring. The early age, too, at which girls become mothers, and the social and moral disturbances and other evils caused by polygamy and prostitution are inimical to the production of healthy and vigorous children.

Another fertile source of disease in India is, the bad condition of the ground on which most of our towns and villages stand. For long years filth has been allowed to accumulate, and drainage been so neglected, that the subsoil has become one pestilent mass of decaying organic matter, notwithstanding that the surface may look clean and wholesome. Some of our model towns in fact are but whited sepulchres,—very fair to look upon, but full of dead men's bones and rottenness. So long as sun and air prove sufficient to carry off and destroy the noxious vapours that exhale through the oxydized crust, all goes well; but let some atmospheric disturbance occur that reduces the disinfecting powers of these salutary agents, and immediately we have a terrible outbreak of fatal disease. I cannot enter on the subject of habits, occupation, social relations, and other agencies that influence the health of communities, but I hope I have said enough to shew you that Hygiene is one of the most important questions of the day, and I hope you may also be led to feel—more especially Students of the Senior and Second Departments,—that you owe other duties to your fellow-creatures, besides attending on them when they are sick. I have not now a hearer, however humble, that may not, if willing, do much to ameliorate the sanitary condition of the natives of India, and, wherever located, you will always find ample opportunity for helping on the good work. Every town and village, every hamlet and house, yea, all the men and women of this vast Empire, are, more or less, setting the laws of Hygiene at defiance, and hence the squalor, misery and disease that meet us on all sides, and the pestilence that yearly carries off its hecatombs of valuable lives, the thews of trade and labour. Although in all our military and civil stations sanitary improvements are gradually being carried out, yet they are much retarded by apathy and opposition, and besides we shall not reap the full benefit from them, until every town and village throughout the length and breadth of the land shall have been brought under the supervision of a strict sanitary code.

Many things, however, conspire to render it difficult for the European to introduce improvements in the homes and habits of the natives of India. Religious scruples are brought forward to obstruct our efforts, offensive habits are persisted in on the plea of custom, prejudices start up to oppose the most salutary propositions, poverty is pleaded as a plea for dirt, and the most benevolent intentions are often ascribed to sinister motives. To you, native Graduates and Students, and to educated natives in general, we look for assistance in this matter; we regard you as a bond of union and channel of intercourse between us and your countrymen, and trust that you will teach them better things. Let it be your aim, therefore, to extend the benefits of sanitary improvement by explaining to the people the advantages of it, by smoothing down their prejudices, and by every means in your power strengthening the hands of those who are labouring for their good. Above all, let your own houses and habits be patterns of cleanliness, as example is always more powerful than precept. I would like, indeed, to see the day, when the house of a Medical Subordinate could always be recognized by its superior cleanliness, neatness, and order. In this, too, as in everything else that you undertake, be honest and earnest; first assuring yourselves of the advantages of sanitary improvement, and then straining every nerve to instil into the people at large similar convictions. If you do so, depend upon it your efforts will be crowned with success, and you will have the rich reward of feeling, that you have been instrumental in augmenting the happiness and comfort, and in preserving the lives of a large number of your fellow creatures!

But I must hasten to a close, and before ending would offer a few words of encouragement and advice to those who have passed a successful examination. And first let me congratulate Native Assistant Ailsworth, who has risen from the grade of Dresser to that of Assistant Apothecary. It is always pleasing to see a man thus ascending the ladder of life, and particularly so when, as in this case, we know that he deserves his success. The appearance that he made amongst other candidates before the Examining Committee was highly creditable, and won for him the commendation of being *facile princeps!* He has for some time been a teacher in the Junior Department of the Medical College, and so conducted himself in that capacity, that I am sure every one connected with the College sincerely wishes him a long and an honorable career. To the two native Students of the Senior Department, who have gained the license of the College, I also offer warm congratulations, and would express a hope that they may seek to emulate the career of former native graduates, who, by their talent, worth, and industry, have won for themselves positions of trust and distinction. Although no longer tyros, I would beseech them still to continue students, for what they have hitherto learned will chiefly prove valuable as an aid to, and foundation for, future acquirements. The medical art is especially one of change and progress, and no one need hope to attain or keep an honorable position in it, who does not seek, both by the bed-side and from books, to increase and maintain his stock of knowledge. At all times and under all circumstances be earnest and faithful, and in due season you will meet with your reward.

And now I must address myself to Students of the Second Department, who have passed for the rank of Assistant Apothecary.

All of you will no doubt be soon drafted into the service and scattered over the country, and many of you will have to leave homes where you have enjoyed the kind and watchful guardianship of parent or friend. The time when a young man first leaves the parental roof is always a trying one, and I wish to warn you, that you will find the path on which you are entering surrounded with many specious temptations. Let me beseech you, therefore, to arm yourselves against them with the fear of God, resist them stedfastly in His strength, and as you do so, I can assure you that their attractions will grow feeble, and your powers of resistance increase,—

> "Perish policy and cunning,
> Perish all that fears the light;
> Whether losing, whether winning,
> *Trust in God, and do the right.*"

I would especially warn you against intemperance, one of the most common, as it is one of the most seductive of vices. In a military point of view it is a very grave offence, always visited with severe punishment; and in a moral point of view it is a heinous sin, leading swiftly and surely to ruin of soul and body. Once give way to it and you open the doors of your heart to an awful flood of evil, and the records of crime in most countries will tell you that it has generally been the first step in the career of vice. Let me entreat you, therefore, to be vigilant against insobriety, and withal to be faithful, diligent, and obedient, and you will thus win for yourselves the pleasant propertios of a good conscience and a fair name.

Lastly, I must say a few words to the native Students of the Junior Department, who have passed as Hospital Assistants. The training they have received is not supposed to qualify them for much more than the performance of the mechanical duties of compounding, administering medicines, and doing similar offices for the sick. Yet even in these, simple as they are, they will have ample opportunities for exercising their good qualities and displaying their usefulness. In the Dispensary let them be clean, active and accurate, and in the Hospital kind and faithful. A stump or sore not properly attended to, may cause a patient much unnecessary suffering and harm, and a dose of medicine delayed for a few hours beyond the proper time of administration, may place the sick man beyond the power of remedies. Let method and order rule all your work, as they save time and prevent mistakes ; and have also a high sense of duty, never being content with merely doing just enough to prevent fault being found with you.

And now I must conclude ; and in doing so, I wish all who are going out of College a long and prosperous life, and hope that they will ever strive to maintain the distinguished character for talent, fidelity, and efficiency, that now belongs to the Subordinate Medical Service of Madras.

Sick Furlough Pay of Medical Officers.

FORT ST. GEORGE, *27th July* 1866.

No. 284 of 1866.—The following extract from a Military Despatch from the Right Honourable the Secretary of State for India, is published:—

Despatch dated 25th June 1866, No. 47.

Para. 5. It has been ruled by Her Majesty's Government that, "pending the settlement of Staff salaries for the Medical Department, in all cases, whether the Staff salary is consolidated or granted in addition to Regimental pay on the old scale, a Medical Officer below the rank of Deputy Inspector-General, on sick furlough, should be allowed to draw, for the first six months, either the amount he would have received under the old rules, or the full Regimental pay and Indian allowances, under the 'new scale' without any portion of Staff salary, whichever may be to his advantage."

Periodicals Received.

Edinburgh Medical Journal to *May* 1866.

American Journal of Medical Sciences, *January* 1866.

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PART I.

ORIGINAL ESSAYS.

ART. VII.—*Analysis of the Historical Register of the 23rd Regiment W. L. I.* By W. H. MORGAN, Assistant Surgeon.

WITH the exception of the selections from the records of their office, published from time to time by the late Medical Board, there is so little in our Indian medical periodicals regarding Native Regiments, that it is presumed that an analysis of the historical register of a Madras regiment, for a period of seventeen years under the old organization, may not be uninteresting to the readers of this Journal. Every Medical officer, who assumes a charge, doubtless peruses the annual and other reports of his predecessors, some possibly for amusement, others for information, all, it is to be hoped, from a sense of duty. An outsider could not, of course, be expected to take much interest in the records of any particular regiment, still, there is so much common to all native corps, that the history of one may be accepted as a sample of that of several, if not of all. All native regiments, for example, are recruited from classes with cognate habits and prejudices; they occupy the same stations in turn; vegetate in huts built on the same principle, or rather want of principle; proceed on similar tours of foreign service; and when the men appear before invaliding committees, in nine cases out of ten they would have us believe that (in addition to the reasons furnished by the regimental doctor) they are afflicted with shortness of breath, dimness of sight, impairment of hearing, and burning of the hands and feet. It is also believed that for purposes of comparison the statistics of a native regiment during presanitary times may be of use to others now flourishing in the same station under more favourable circumstances.

It is impossible to read through a narrative like the following, without feeling that the sanitary condition of native troops is capable of improvement, and it is satisfactory to find that the wants of the sepoy are beginning to attract attention. Not long since a proposition for the general hutting of the native army was submitted to the Governor-General in Council, and though for financial reasons its consideration was temporarily abandoned, it was something to have the "full importance" of the proposition conceded by the highest authority in India, contrary to the twilight judgment of those conservatives who imagine the sepoys are well off as they are. Clothing, however, costs less than State barracks, and it requires no great amount of foresight to predict that ere long the Arctic equipment of the sepoy will be replaced by dress better suited to inter-tropical guard rooms. While I write, the insanitary condition of the *boudoirs* to which high-caste females are so partial (despite the public conveniences provided for them by Government) is undergoing consideration. Malcolmson* lived to see sepoys supplied with cots in hospital; hospital bedding was the subject of a special order by Sir Hope Grant in 1864; can it be doubted that attention would be paid to wants infinitely more important if they are brought to notice?

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* Vide "Observations on some forms of Rheumatism prevailing in India," by Assistant Surgeon J. G. Malcolmson, Madras Medical Establishment. 1835, p. 23.

Stations.—The stations occupied by the 23rd Regiment from 1849 to 1866 were as follows: (the historical register from which I quote does not go beyond 1849.)

1849..........Kamptee.
1850-54......Saugor.
1854-56......Seetabuldee and Kamptee.
1856..........Partly *en-route* to Kimedy.
1856-58......Russelcondah.
1858-60......Rangoon.
1861..........Rangoon, Palaveram.
1862-65......Trichinopoly.

Topographical descriptions are rarely given, either because they had been previously rendered by the medical officers when in other charges, or because the latter had only recently arrived, and knew little about the station occupied by the regiment; or had little to add to the available records. With regard to meteorological observations the medical officer who penned the annual report for 1849, and who was unprovided with instruments, "regrets" that he was "unable to offer any body of facts regarding the climate of Kamptee, likely to be of service in a department of knowledge which is every day more and more recommended to our attention by scientific bodies, and which might very profitably occupy our leisure time." There is very little doubt that these remarks would be endorsed by the majority of medical officers in charge of native regiments. At Saugor the regiment was in medical charge of an officer who appears to have been more fortunate than the generality of his brethren in this respect, and we glean the following particulars from his report for 1851-52. "For an Indian station the climate of Saugor is very salubrious; fevers of an intermittent type, rheumatism, slight colds, diarrhœa and dysentery appear to be the prevailing diseases. The thermometer ranges from 109° to 34°. The hot season rarely lasts for two months, and it is only for fifteen or twenty days before the setting in of the rainy season that there is really any hot or oppressive weather.

1851-52.	Temperature Faht. Thermometer.			Rain.
Months.	Max.	Min.	Mean	Inches.
April.. ..	103°	66°	93½	0·04
May......	108	75	91½	0·12
June.....	109	75	92	4·10
July......	100	72	86	18·15
Aug......	92½	70	81¼	12·34
Sept......	89	64	76½	11·77
Oct.... ...	92	62	77	0·03
Nov.. ...	84	47	65½	0·03
Dec.......	78	49	63½	—
Jan.......	82	34	58	0·05
Feb.......	89	54	71½	0·01
Mar... ...	92	54	73	0·95

"The rain set in usually about the autumnal equinox. The fall of rain during 1851 was 47·59 inches, a quantity generally regarded as excessive, but I have been unable to find an authentic statement of the fall in former years with which to compare it. From the middle of September till the middle of March there was an almost uninterrupted continuance of dry weather. The prevailing winds were westerly, varying in the rains a few points to the south, and in the hot weather as much to the north. The coolest weather is from the north and south-east. In the cold weather westerly winds usually bring clouds, and are attended with a rise in the temperature. A south-east wind is uncommon. North-westers are rare. Hail storms are not common, and when they occur in April and May, are injurious to crops." Here follows a monthly statement of the atmospheric phenomena which is too long to extract.

In the Sanitary Report for 1861, the following remarks appear about Palaveram :—" That cholera has originated in Palaveram during the last two years (1859-60), and that these as well as the imported cases have been very severe and fatal. Further, it seems probable that the immunity from this disease in an epidemic form which this station has hitherto enjoyed, is owing to the general healthiness of the native population, and not to any specific influence which the locality possesses over the particular poison of cholera, hence it is very important that every means should be used to keep the station in as favorable a state for preserving it healthy, otherwise there is reason to fear that Palaveram will lose its place among 'exempted or refuge villages.' Its climate is undoubtedly injuriously influenced by its being situated immediately under, and on the north-west side of, a small range of hills, which prevents the free access of the sea breeze to a great part of the station, particularly to most of the houses occupied by the European officers; besides some of these houses are situated so close to the hills as to be fully within the influence of the heat radiated from the masses of rocks of which they are chiefly composed. * * * * Fortunately from the position of the bazaar, the native portion of the community is removed from the injurious influence of the hills, otherwise Palaveram could never have enjoyed so enviable a notoriety for healthiness. Particularly during the hot season when its influence is most beneficial, the sea breeze blowing from the southerly direction has free access to the bazaar, the European Veteran Company, and the Pensioners' lines, while most of the houses of the European officers are shut out from it by the hills. This explains what to many seems so strange, that Palaveram, so notorious among European officers for its great heat and oppressive climate, should be so healthy. Mere heat does not necessarily render the station unhealthy, but had the native portion of the community been located where the European officers are, the want of a free circulation of air through their narrow and crowded streets would have led to baneful results." Certain removable obstacles to the free circulation of pure air in and around the Cantonment are pointed out, and the steps taken to bring them to notice with (alas) the usual results.

Lines.—Following the order usually observed in annual reports, the position of lines (which answer to barracks in European corps) and hospitals will next engage our attention, and I know of little in a sanitary point of view more deserving of it. The Kamptee lines appear to have been described in a former report, so little is said regarding them in that for 1849. Officers for the day were required by regimental orders to attend particularly to the state of the lines, and to make every sepoy responsible for the cleaning of the trench and road in front of his hut.

At Saugor the regiment was for some months under canvas till new lines were built " on raised and well drained ground in the centre of the Cantonment." They consisted of parallel rows separated by broad lanes at right angles to the main road. The huts were "roomy substantial dwellings, constructed of stone and mud and roofed with tiles."

The lines at Seetabuldee were similarly situated with regard to elevation and were about 150 yards in rear of the barracks (this I take to be the place of arms), "the huts ran in parallel rows, were small, out of repair and badly ventilated."

At the second occupation of Kamptee by the 23rd, it was hutted in the centre of the Cantonment, and the lines though low, were considered healthy. The huts were of the usual (Madras) description, in rows, separated by streets, small, badly ventilated, built of mud, and tiled.

At Russelcondah the lines occupied "the base of a hill gradually sloping to the south, where they are bounded by a river, the huts in this situation were low, and," adds the medical officer, "I am given to understand are under water during the monsoon—those situated nearer the hill were much higher and consequently dry. The streets narrow and dirty, drainage bad, huts very irregular (in this respect differing from the geometric simplicity hitherto noted at other stations), low, (here the resemblance reappears), badly ventilated, built of bamboo mats, plastered with mud, or wattle and dab thatched with grass."

In Rangoon we learn that the sepoys' huts were elevated about 18 inches from the ground with a flooring of parallel "bamboos which prevented them from being effectually swept and kept clean below the floor, and sleeping so close to the ground in such a moist climate as that of Burmah, was likely to occasion fevers, bowel affections, &c." The huts were composed of plaited bamboo matting, unplastered, thatched with leaves of a variety of the palm. Each hut was 15 feet square within, the side walls being 6 feet 8 inches in height, and was intended for the accommodation of eight men, but at the time the second annual report was written at Rangoon, each hut was occupied by six men. As this appears the first station at which the dimensions of huts are given, we find that each sepoy had a cubical space of 185·6 feet and a superficial area of 28 feet when he had seven comrades, and 247·5 feet of cubical space, and 37 feet of superficial area when these had been reduced by *nostalgia* and *beri-beri* to five. These figures may be contrasted with the 648 feet of cubical space and 36 feet of superficial area ordered by the Government of India in later years for native male criminals in jails.

There were no huts for the men on the arrival of the regiment at Palaveram, and they were accommodated in tents for some time. Huts were since built close to the station bazaar, and the medical officer states that had he been consulted in the selection of a site, he would have recommended a different one. "At present," he continues, "the huts of the 23rd Regiment, those of the Native Infantry Depôt, the station bazaar and native town, are all crowded together. It may be in some respects a convenience to the sepoys having their lines near the bazaar, but the crowding together of so many native habitations is, I think, objectionable, and this might have been avoided by selecting a site for the regimental lines at the other end of the station, they would there also have been nearer the place of arms and hospital."

The Pootoor lines and hospital occupied by this regiment at Trichinopoly have been described in a previous number of this journal.* The last annual report says, "the huts are constructed on a plan which obtains throughout the Presidency, and several defects in them could be pointed out; but as any representation to remedy these would necessitate the huts being pulled down, no steps have been taken."

Hospitals.—That at Kamptee is described as "very airy and comfortable, its only imperfection is its close vicinity to the huts, rendering it a business of some difficulty to keep the slight cases from spending their time in them between the hours of the medical visit."

At Saugor the sick were accommodated in a stone building paved with slates, well situated on hard, stony, sloping ground near the centre of the Cantonment. The centre room or ward was 108 feet × 20 × 17½; laboratory well furnished with shelves, and more comfortable and convenient than similar rooms in the generality of native hospitals. The whole building was thoroughly ventilated and yet admitted of being well closed against the cold; it afforded room for forty-eight cots without any crowding or risk of having patients in currents of air. The cook-room and privy seem to have been exactly opposite to each other, which is not so bad as having them adjacent, as in the 23rd Hospital of the present day. "The very usual objection, however, is particularly applicable to this hospital, it is so close to the site intended for the lines, that it will be always difficult to keep the patients from slipping out to their families. The hospital is without any enclosure."

At Seetabuldee the barracks and hospital formed one building, "surrounded on all sides by an open verandah, and ventilated by doors and windows placed opposite each other." The wards could accommodate about sixty patients.

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* Vol viii. p. 326.

The second hospital occupied at Kamptee was "situated on an elevated piece of ground on the right bank of the Canan river, and about four or five hundred yards north of the lines. It consisted of two wards, each capable of accommodating thirty patients. There was no enclosure to the hospital, and as there were twelve doors to it, it was "utterly impossible for one sentry to prevent the patients (if so inclined) absenting themselves, more particularly as there is [was] an arrack shop convenient to the hospital, which is a great temptation to the men."

The hospital at Russelcondah, surrounded by a five feet wall and capable of accommodating fifty patients, was situated at the base of a hill adjacent to the lines. It consisted of two wards built at right angles to each other, with an open verandah in front and rear.

In Rangoon the hospital (of plaited bamboo matting unplastered) consisted of a detached building 117 feet × 20 × 15½ feet, the main ward was "raised on piles to a height of 7 feet," and below this "a ground ward" had been formed "of the same breadth of course as the upper ward, but only 80 feet in length." The building was capable of being well ventilated, and was liberally supplied with glazed doors and windows, and rooms which were set apart for Surgery, Store-room, &c. At first there was no cook-room, and the patients were in consequence absent for several hours daily, but one was subsequently built.

The ground on which the hospital stood at Palaveram was low and in wet weather swampy, and there was no road leading to it. It consisted of one large ward with a verandah in front and rear, and a small room at either end of each verandah.

Duty and Employment.—Throughout the seventeen years, with the exception below noted, no complaint is recorded regarding the severity of the work in Cantonment. Even when it is said that the sepoys have had one night in bed out of every seven, it should be taken *cum grano*, for after all a day of guard or of orderly duty is a day of which the greater part is spent in sleep.

"I rejoined the regiment," says a medical officer in 1854, "as it was marching out of Saugor on the 1st November. It had been raining almost incessantly for three days previous to leaving Saugor, and it continued to rain for three days afterwards. We reached the iron bridge at 10 o'clock, where we were ankle deep in black mud and slush, the weather began to improve, and we marched about a mile and a half, where we encamped on a fine open and tolerably dry spot of ground, and halted to allow the families of the men to come up. The road from Saugor to Jubbulpore was in a most wretched state the whole way, and more utter misery and distress amongst the families and followers of the regiment I never witnessed. We reached Jubbulpore on the 22nd, marched the next day to Nerbudda river, and encamped on the left or southern side of that river. Up to this period we had no sickness to speak of, though the men had been worked hard, and their appearance and condition manifestly indicated they had undergone much labour and fatigue. We were occupied two entire days in getting the families and baggage across the river. The thermometer in the morning was 36° F. (4 degrees above freezing point), and the same day at noon in the sun's rays the mercury rose to 124°. The men in fatigue parties, which were relieved every four hours, working hard (in assisting the bandies across the river) frequently up to their waists in water." Nearly a third of the men were subsequently in hospital from fever and bowel complaints, and their ailments were aggravated by their not being able to get their food with regularity. "After crossing the Nerbudda, the march to Seetabuldee was prosecuted without a single halt. The stages averaged from ten to twelve miles a day, but many of the men after arriving at the halting ground, went back to the last stage to help their families into *(sic)* their bandies."

At Seetabuldee duty was rather hard since the Rajah of Nagpore was gathered to his fathers, as two companies under a European officer were furnished daily to the city, and the men had, in consequence, one night weekly in bed. The very great increase of admissions into hospital (1,049 against 538 in the preceding 12 months) was, in a great measure, attributable to the march of the head-quarters of the regiment in wet weather. A year later (1855) four companies escorted treasure to Mirzapore from Kamptee, and were so employed for three months and a half; no casualties occurred during the march, but the men suffered severely on their return with diarrhœa, and an officer accompanying

the detachment had an attack of hepatitis, which nec
tated his proceeding on sick certificate to Jubbulpore.

The average strength, sickness, and mortality are embo
in the appended tabular statements.

Principal Classes of Disease.—The following tables sp
for themselves.

Admissions and Deaths arranged in two quinquenni periods and a broken period of 21 months; accordin to the old classification of Diseases.

	1849-1853-54.		1854-55 to 1858-59.		From 1st A 1859 to 3 Dec. 18	
	Aggregate strength. 4137·5.		3931·5.		1456.	
	A.	D.	A.	D.	A.	D.
Fevers	929	5	1530	26	284	[illegible]
Eruptive Fevers	27	...	7	...	6	...
Diseases of the Lungs	33	6	88	3	38	4
„ „ Liver	4	1	7	...	1	...
„ „ Stomach and Bowels	215	4	627	11	349	7
„ „ Brain	29	2	21	2	11	..
Epidemic Cholera	2	1	27	11	2	2
Dropsies	12	1	77	13	280	7
Rheumatic Affections	179	...	238	1	144	...
Venereal and Diseases of the Genital Organs	78	...	94	2	68	...
Abscesses and Ulcers	367	1	546	1	169	...
Wounds and Injuries	149	...	262	...	45	...
Diseases of the Eye	123	...	112	...	18	...
„ „ Skin	38	...	226	...	150	1
Other Diseases	55	9	96	5	62	2
Total...	2240	30	3953	75	1627	[illegible]
Ratio per one thousand	541·4	7·25	1005·4	19·07	1117·4	17

Admissions and Deaths from 1861 *to* 1865, *arranged according to the new classification of Diseases.*

	Strength 3167.		Ratio per 1,000 of	
	Ad.	D.	Admissions to Strength.	Deaths to Strength.
Miasmatic diseases.	904	43	285·44	13·57
Enthetic „	80	0	25·26	0·00
Dietic „	4	0	1·27	0·00
Parasitic „	62	0	19·57	0·00
Constitutional „	19	3	5·99	0·95
Local „	319	5	100·73	1·57
Developmental „	60	0	18·94	0·00
Violence, &c.	115	1	36·32	0·32
Total...	1563	52	493·52	16·41

At Kamptee in 1849, "neither emetics nor saline mixture were used in any stage of intermittent. Common purgatives were employed freely when necessary, but no purgative was given unless there was some decided evidence of its being required. Bark and Quinine have been found wholly unnecessary even in very severe intermittents. Our sole reliance during the year has been upon a powder composed of impure phosphate of lime and sulphur in the proportion of ten grains of the latter to one of the former."

At Saugor in 1851-52 "fevers were more prevalent than any class of diseases, an emetic and a purgative sufficed for the cure of a few cases, but by far the greater number required an antiperiodic—bark occasionally succeeded, but by far the most efficient and certain remedy was quinine to the extent of from 18 to 24 grains in divided doses before the expected return of the disease. Relapses were rare, and the only complications were slight cerebral affections and diarrhœa." During the first nine months embraced by the report for 1852-53, 504 cases were under treatment, of which nearly a half were slight cases of fever. Fevers and rheumatism of an obstinate character were the prevailing diseases in 1853-54. The very great increase of admissions in 1854-55 was, as before stated, attributed to the march of the headquarters in wet weather; fevers, rheumatism, abscesses and ulcers, contusions, diarrhœa and ophthalmia were the prevailing complaints; they presented nothing peculiar in character. The same observation regarding them recurs in the report for 1855-56.

A large number of admissions under the heads of dysentery and diarrhœa occurred on the march from Kamptee to Russelcondah (in the year succeeding) principally amongst the Bengalees, who attributed the disease to the use of rice which they had not been accustomed to, wheat flour being too expensive for them. Cholera prevailed (in Kamptee) during the months of April, May and June. During its prevalence "there were great and frequent changes in the weather, the wind was changeable, and at times blowing with great violence, frequent dust storms, considerable electrical disturbance, sometimes cloudy with drizzling rain, at other times close and sultry, sun's rays intensely hot." Fevers and chronic rheumatism are mentioned as principal diseases of Russelcondah in 1857-58.

Of 1297 admissions in 1858-59 in Burmah, nearly one-fourth were from diarrhœa, about one-sixth arose from fever, and one-twentieth from rheumatism. There were also 56 admissions from beri-beri, which disease is thus described in the report for 1858-59 by Dr. R. Wilson, the present able and energetic Zillah Surgeon of Tinnevelly :—

"The disease of burning of the soles of the feet appears to be endemic in Burmah, and principally to affect natives of Southern India. It is of an asthenic and chronic character, the vital powers being much depressed. The disease generally commences with weight, numbness and throbbing of the feet and legs, afterwards a burning sensation, chiefly confined to the soles of the feet ; this pain is frequently of a remittent character, being gradually more severe at night. Tongue generally coated with a thin whitish fur at the back and centre ; appetite impaired ; bowels irregular ; urine frequently high coloured. Pulse invariably quick, varying from 100 to 150 and weak, this small, quick, thready pulse is a pathognomonic sign of the disease ; or the pulse may be quick and weak with the interval obscurely defined. There is also dyspnœa on exertion. After a time, varying from a few weeks to as many months, the patient appears to lose power over the motor nerves, and proper control is thus lost over the movements of the lower extremities, the patient totters in his walk, he also looses flesh.

"As the disease advances, his feet and hands less frequently become œdematous, effusion into the cavities of the chest takes place, and the patient expires suddenly, or colliquative diarrhœa closes the scene. Medicine or diet seems to exert little or no influence over the disease when once developed. Quinine, iron, zinc, fish oil, petroleum, arsenic, alteratives, diuretics and blisters to the spine with stimulating frictions to the affected parts have all been used without producing any apparent beneficial influence over the disease. At present the only remedy which appears to exert any power in arresting the progress of the disease is a speedy removal to the continent of India, where a few months' residence with his accustomed food, and associations, is generally sufficient to restore the patient to good health."

"On the arrival of the regiment from Burmah," writes the Officer in medical charge in 1861, "at the beginning of the present year most of the native ranks looked sickly, many were suffering from that class of symptoms which has hitherto been denominated beri-beri, and many others were anxious to make out that 'the Rangoon disease' had so disabled them, that they were unfit for any further service. The latter were, of course, men who had served fifteen years and upwards, and who consequently, on being discharged would be entitled to a pension. I have remarked that, as a general rule, the most inefficient sepoys in this Regiment as regards their natural physical conformation, are to be found among those who have not served more than five years." After the discharge of men considered unfit for further service, "the Regiment was particularly healthy, the largest number of admissions were from rheumatism, intermittent fever and atrophy, the first and third of these occurred almost entirely in men who had contracted the disease in Burmah, the generality of the fevers were slight, most of the cases occurred among men who had been on leave, and contracted the disease on their journey to and from their native villages."

At Trichinopoly, in 1862, the admissions were principally from zymotic diseases, as intermittent fever, diarrhœa, dysentery, cholera and rheumatism. These admissions were more frequent from September to December. In 1863 and subsequent years the principal diseases treated were of this class, and the subjoined table from the last annual report exhibits the number admitted under the above heads during the last three years.

Year.	1863.	1864.	1865.
Average strength.	670	638	649
Fevers	137	83	48
Rheumatism	20	20	20
Dysentery	17	7	12
Cholera	34	5	5
Diarrhœa	38	11	14

The percentage of sick to strength has fallen from 62 in 1863 to 30·5 in 1865.

Epidemics.—Children in the regimental lines at Saugor suffered from influenza in March 1853, and from April to June in the following year, and at the same station small-pox broke out among them. In 1855 at Kamptee they had chicken-pox and measles.

"Cholera in an epidemic form prevailed in the lines at Kamptee in April, May, and June 1856. Twenty-three cases occurred among the men of the Regiment, out of which number nine proved fatal. One officer died from the same disease." After detailing the characteristic symptoms, the medical officer says, "The treatment consisted in the administration of Calomel gr. x., Opium gr. i. on admission, wine and brandy, frictions and hot sand to the extremities, sinapisms to the stomach, and a mixture composed of the following ingredients: ℞. Æther Sulph. ʒvi., Sacchari ʒii., Aquæ ℥viii., fiat mist. ℥ss. to be given alternately every 15 or 20 minutes with brandy or wine. Cold water in small quantities to assuage thirst."

Cholera spasmodica occurred again as an epidemic in December 1862 at Trichinopoly. "The weather had been cloudy and drizzling from the beginning of the month; and the atmosphere oppressive. One of the earliest fatal cases was remarkable, as the patient recovered from the collapse and passed feculent motions, but died three days afterwards comatose. The patient, since the access of cholera, had not passed any urine, but on the fourth day a small quantity was drawn off. The coma was preceded by difficult spasmodic breathing and vomiting of greenish pasty matter. It was observed that the patients who suffered from this spasmodic breathing almost invariably died."

The families in the lines appeared to suffer severely from the epidemic. They preferred to use their own remedies, and very few applied at the hospital for European treatment. It is to be regretted also that many of the sepoys concealed their ailments as long as they could, and were generally brought into hospital in the collapsed state, though the Commanding Officer, at my suggestion, repeatedly issued orders that men should come to hospital at the onset of the disease. The regiment located in these lines always suffers more from the annual visitation of cholera than those in the other lines in the Cantonment.

The majority of cases were treated on the plan recommended by Dr. Morehead of Bombay. The horizontal position, the application of moderate warmth, dry friction with the hand, occasional small quantities of cold water, sago with wine, one drachm doses of aromatic spirits of ammonia every hour during the collapse, and blue pill, quinine and camphor in small doses when re-action sets in.

The fatal termination in many cases could be directly and positively attributed to the patient having been raised up by the orderlies into a sitting posture (contrary to stringent directions) after reaction had set in, but while the heart was yet too weak to bear the change of position. The success of the treatment might be inferred from the unusually large number of recoveries, the total treated on this plan was 21, deaths 4; giving the mortality rate ⅕ to the number admitted or 19·04 per cent."

Cholera reappeared in December 1863, and the facts relating to that outbreak are condensed as follows in the report for that year. (1) Of 24 cases only 3 applied for treatment within the first hour of the attack; 6 within two hours; 3 within four hours; 5 within five hours; 3 allowed twelve hours to elapse, and 2 did not come into hospital. (2) Cases occurred in all the companies. (3) Of 22 cases treated in hospital, 6 recovered, 14 died in the stage of collapse, and 2 after reaction had set in. (4) Of 4 cases in which Dr.

Mudge's turpentine treatment* was tried, all proved fatal. Of 8 in which a mixture of chloroform with tincture of opium, aromatic spirits of ammonia, tincture of ginger, was given, 2 recovered and 6 died. Of 10 cases in which this mixture was given alternately with Condy's solution of the alkaline permanganates, 4 recovered and 6 died.

Mortality.—According to age and service.

Of 182 deaths of Hindoos and Mussulmans in hospital,
46 occurred in men of 35 and under 40 years of age.
35 „ „ 40 and under 45 „ „
33 „ „ 30 and under 35 „ „
28 „ „ 25 and under 30 „ „

The largest mortality appears to have taken place in men of from 15 to 20 years' service, next in those of from 10 to 15 years, and next in those of from 20 to 25 years.

Vaccination.—In 1849 "very little was done towards vaccinating the followers of the corps, owing to the difficulty of keeping up the supply of vaccine matter." In 1850 no opportunity was neglected, but the difficulty of procuring lymph at Kamptee was considerable. During the march of the Regiment from this station through Jubbulpore, a vaccinator went to the camp for two days operating on all those who could be brought to avail themselves of the boon, but the natives, with their usual obstinacy, refused in general to avail themselves of the boon. The Commanding Officer sent havildars repeatedly through the camp to order the people to bring their children to be vaccinated, but the people were remarkably indifferent to persuasion or order on the subject. In 1851-52 at Saugor no lymph was procurable till February of the last-mentioned year from which vaccination was kept up during the ensuing twelve months. In 1853-54 lymph was obtained from Calcutta, Benares, Cawnpore, Mhow, Hoosungabad, and Kamptee, all of which failed. Some obtained from Futtyghur succeeded. Above 100 cases were operated on in 1854-55 with fair success, but the medical officer observes that "when persons are once vaccinated, it is almost impossible to get them at the hospital on the sixth or seventh day for inspection and extraction of lymph." The difficulty of obtaining lymph is again noted in 1855-56 at Kamptee. In 1856-57 the medical officer was "of opinion that none (out of 17 cases reported) were properly vaccinated, the lymph supplied not being lymph at all but matter from a common pustule." In 1857-58 he "went into the lines to the doors of the sepoys, hoping they might be induced to have their children vaccinated, and the plan succeeded better than having them brought to hospital."

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* See Madras Quarterly Journal of Medical Science, vol. vi., p. 410.

Vaccination was not kept up during the stay of the regiment in Burmah, and on the arrival of the sepoys' families at Palaveram it was attempted but the lymph used had failed. At Trichinopoly in 1862 about 40 children were operated on. Lymph frequently failed in 1863, and when it was obtained from the Civil Dispensary, there was some trouble about getting children, as either their parents were on guard, or orders were misunderstood, or orders did not come through the proper channel, or no orders were given, and a series of other excuses, but they were gradually surmounted, and from 60 cases the number increased to 204 in 1864. The sepoys are lamentably apathetic in the matter. It was frequently reported that there were no children requiring vaccination in the lines, but as no statement to that effect could be obtained *in writing*, the Adjutant was invariably written to, and some unprotected children generally obtained. In 1865, 58 cases were vaccinated, and the falling off is attributed to there having been but one subordinate attached to the hospital during the year against three in the preceding; to a scarcity of and difficulty in obtaining children from the lines; and to the failure of lymph which could not as before be kept up from the former source of supply in the Civil Dispensary.

The late Lord Palmerston once said, that there were but two things over which the immortal gods had no control—past events and arithmetic—and whatever doubts there may be regarding the figures in the subjoined tables A and B, it is clearly not my province to do more than summarise the deductions from them.

1. For sixteen years and nine months, the total strength (Europeans excluded) was 12,846, the total treated 10,082, and the total of deaths in hospital 189.

2. The average annual strength may be set down at 766·9.

3. The average treated annually at 601·9.

4. The average annual deaths in hospital at 11·28.

5. The percentage of deaths in hospital to strength 1·47.

6. The percentage of deaths to treated 1·87.

7. With the above annual strength (766·9) and average treated (601·9) the percentage of sick to strength would be 78.

8. During the tour of service in Burmah the mean strength was 886, and the average yearly treated 1,063, the percentage of sick to strength was close upon 120—(119·97.)

9. There were 48 deaths in the regimental hospital and 25 out of or in other hospitals during the above tour of service. The percentage of deaths to strength and to total treated would be respectively 8·23 and 6·86.

10. During this period and the following year 219 were pensioned and invalided. The number pensioned and invalided during the thirteen other years (for which figures are available) was 257—so that while the invaliding and pensioning on ordinary Indian service was at the rate of 19·7 per annum, it rose to 54·3 per annum during and immediately after service in Burmah.

11. The European strength may be set down at 12·5 per annum. The deaths of six European officers are recorded since 1849; in other words European officers have died at the rate of one nearly every two years and ten months. They appear to have been sent away on sick certificate (to Europe principally) at the rate of one per annum.

12. There are no records concerning the officers' wives and children, but as far as I have been able to ascertain from the older officers, there has been one death among the former and three among the latter since 1849.

13. Lastly, about the non-combatants, (I don't mean those who incur the hazards of battle about once in a life time, but those *who do battle daily* exposed to the contagions and infections of hospitals) I observe that there were no less than 23 officers in (temporary or permanent) medical charge of this regiment during the period under notice. Of these six are on sick certificate, seven are dead, one has retired from the service, while the rest ("what shadows we are—what shadows we pursue") are in harness in India.

TRICHINOPOLY, *June* 1866.

A.

23RD REGIMENT W. L. I.

Statement showing the Strength, Sickness, Mortality, Number Invalided, Pensioned, &c., from 1849 *to* 1865.

	1849	50-51	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60 9 months.	61	62	63	64	65
	Kamptee.	Saugor.	Saugor.	Saugor.	Saugor.	Seetabuldee.	Seetabuldee and Kamptee.	Kamptee, Kimedy, Russelcondah.	Russelcondah.	Rangoon.	Rangoon.	Rangoon.	Rangoon, Sea, Palaveram.	Trichinopioy.	Trichinopoly.	Trichinopoly.	Trichinopoly.
Average yearly strength. Europeans.	12·25	15·25	0	15·5	13·	14·75	13	12	14	13	9	8	12	22	12	7	5
Average yearly strength. Natives....	908	778·25	825	825	802	821	814	803	743	763	840	616	489	684	680	631	649
Total treated	422	400	333	591	550	1061	642	561	384	1297	1161	466	319	388	452	272	205
Do. Discharged cured	401	362	324	577	532	1033	617	521	338	1249	1101	441	314	353	409	258	188
Do. Deaths in hospital....	7	11	7	2	6	14	8	25	8	22	19	7	4	11	25	6	7
Do. Deaths out of or in other hospitals.......	2	0	0	1	0	0	0	2	1	0	17	11	14	2	2	1	6
Do. Invalided...............	3	0	0	1	0	0	6	9	17	19	0	0	0	0	0	0	0
Pensioned	9	15	0	0	1	1	7	14	18	24	0	111	65	72	11	67	6
Discharged on account of disease..........	1	0	1	0	1	0	0	0	0	0	0	0		12	3	13	1

B

Table exhibiting the Diseases under which Deaths in Hospital were returned from 1849 *to* 1865.

	Abscessus.	Aneurisma.	Anasarca.	Apoplexia.	Asthma.	Atrophia vel asthenia	Beri-beri.	Bronchitis.	Bubo.	Cancrum Oris.	Catarrhus acuta.	Cholera Spasmodica	Cynanche trachealis	Diarrhœa.	Dyspepsia.	Dysenteria.	Dyspnœa.	Ebriositas.	Feb. Com. cont.	Febris Intermit.	Febris remittens.	Hepatitis.	Lepra.	Mania.	Nephritis.	Obstipatio.	Paralysis.	Pneumonia.	Phthisis pulmonalis.	Rheumatismus.	Syphilis.	Ulcers.	Venenatio.	Total.
1849.	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	1	...	1	...	1	...	...	...	...	7
1850-51.	...	2	1	...	...	...	...	...	...	1	...	1	...	2	1	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	11
1851-52.	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	1	...	1	...	...	...	1	...	...	1	...	...	...	1	...	...	...	...	7
1852-53.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2
1853-54.	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	1	...	1	...	...	...	...	...	...	...	6
1854-55.	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	7	1	...	...	...	...	...	1	...	...	...	1	...	...	14
1855-56.	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	4	...	...	...	...	...	...	...	...	...	...	...	...	...	8
1856-57.	...	...	2	...	...	4	...	...	...	...	1	9	...	...	...	3	...	...	1	3	...	...	...	...	...	...	...	...	...	2	...	...	...	25
1857-58.	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	8
1858-59.	...	...	4	...	...	1	3	...	1	...	1	...	...	6	...	1	...	...	...	4	...	...	...	...	...	...	...	...	...	1	...	...	...	22
1859-60.	...	...	1	...	...	1	5	2	...	...	...	1	...	4	...	1	...	...	...	2	...	...	1	...	...	...	...	...	...	1	...	...	...	19
1860.	...	...	...	...	...	1	1	...	...	...	...	1	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	7
1861.	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	4
1862.	...	...	...	...	...	...	...	...	...	...	...	9	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	11
1863.	1	...	1	...	...	...	...	...	...	...	...	20	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	25
1864.	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	6
1865.	...	...	1	...	...	...	...	...	...	...	...	3	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	7
	1	2	14	2	1	7	9	3	1	1	3	51	1	15	3	10	1	2	5	26	7	1	1	1	3	1	3	1	5	5	1	1	1	189

ART. VIII.—*Report on the Fever which prevailed throughout certain Districts of Western Malwa in* 1865. By H. C. BRODRICK, Esq., M.D., 1st Regiment, Central India Horse.

(Forwarded by the Principal Inspector General, Medical Department.)

From HENRY C. BRODRICK, M.D., *Assistant Surgeon, 1st Regiment, Central India Horse.* TO THE AGENT TO THE GOVERNOR-GENERAL FOR CENTRAL INDIA.

AUGGUR, *Februarg 7th*, 1866.

SIR,

I have the honor to submit to you a report on the fever that during 1865 prevailed so extensively, and proved so fatal, throughout certain Districts of Western Malwa.

The report embodies the result of inquiries I made personally in the Districts where the disease prevailed, and it is imperfect for several reasons.

1st.—Because I could only make inquiry when this particular malady was matter of history, when it had almost entirely passed away.

2nd.—Because the persons examined were for the most part rude and ignorant, and were naturally inclined to exaggeration.

3rd.—Because they were apt to confuse two separate maladies under which they had recently smarted, namely Cholera and the Fever in question.

4th.—Because they were prone to say what they thought they were wanted to say, and jumped readily at the suggestiveness of anything like a leading question.

My inquiries were made at Gungrar, at Seeta Mhow, and the neighbouring villages, at Mundesson, Mulhargurh, Jowra, Sulana, Rutlaum, and Kachrode. At most of these places the disease was known as "Gujrati Beemari;" by the educated Mussulmans of Jowra it was described as "Yerkan" or "Peelia," both terms indicating Jaundice; whilst at Oojein it was called "Bèlia."

It is called "Gujrati Beemari" because it is believed to

in its growth by the branches it gives off, th
analogous to the breaks or intermissions i
an ordinary fever. But a twining plant or
gives off no branches, it grows on and on
fications. So, this new kind of fever goes
without any intermission, and thus it is

All the natives whom I have questioned
that the disease is a new one to Malwa, but
same time that it has been described in bo
prevailed elsewhere.

I proceed to sketch *their* account of this m

It was a fever that appeared soon after the
rains, it lasted ordinarily three days, without
career. After three days the patient's breath b
and so he died.

The whites of his eyes became yellow; hi
yellow; his sweat was yellow, and it stain
yellow.

The urine was high colored, the bowels c
skin was very hot.

Or the patient vomited blood, or had purg
matters, or he passed worms by stool or vomi

He had pain under the ribs sometimes, on
the other, this pain made him catch his breat

There was great discrepancy in the several accounts of the vomiting and purging of worms. I shall allude more to this anon.

At Gungrar there are two thousand five hundred houses; here, during and subsequent to the Dèwalli festival about three hundred men, women, and children died of the "Gujrati Beemari." In the current January, a case would occur now and then, but very rarely, for the disease had steadily abated after the setting in of the cold season.

No Hukeems lived at Gungrar, there was no remedy known for the disease, people practised one upon another, some gave one remedy and some another, all were alike useless.

At Seeta Mhow I made very minute inquiries, but was informed that no cases had occurred in the city itself. It had, however, ravaged the villages of *Akia* and *Laktullie,* close by, whither I proceeded to make inquiry on the spot.

The village of Akia lies only four miles distant from Seeta Mhow. Before the month Bhadon it had contained fifty-houses. The fifty had now dwindled to twenty-five. Twenty-five houses had been desolated by this dreadful scourge, and the crumbling walls of the crazy, roofless and tenentless huts, where the *Dhatoora* and other wild plants were already springing up, formed one of the most miserable pictures I had ever gazed upon.

The Thakoor of the village, Luxumon Singh by name, a kinsman of the Rajah of Seeta Mhow, told me how twenty-two persons, members of his family and household, had been swept away since the month Bhadon, how of these twenty-two souls, three were his own brothers, one a nephew, and one a grand nephew, and how he himself had suffered also from the malady.

He said that over ninety persons altogether, inhabitants of Akia, had died from the new fever, besides twenty dying from cholera, and in depicting the ruin that had overtaken his village, he used the eloquent expression that Sir John Malcolm remarks upon, as used in certain parts of Malwa to express the ruin that marked the track of the Pindary freebooters—he said his village was "*bèchiragh.*"

I was informed by some of the villagers at Akia that the fever underwent relapses. A man would apparently recover and be again attacked, and that, thus, a man had been known to have eight several seizures.

At Akia some of the fever patients are said to have had purging and vomiting of blood and worms.

I examined the village curiously. There was nothing unusual about it; it was surrounded by fields of young poppy and jowar, and it had no jungle near it except towards the west, where was a dense clump of prickly pear.

The water supply was from a 'kutcha' well, a section of which showed the ordinary trap formation that prevails through the district, but lacking the bands of sandstone flags that obtain at Seeta Mhow. The water was fresh and good to the taste, there were, at my visit, ten feet of water in the well only, for the irrigation of the opium fields was going on busily at the time.

In the hot season, the Thakoor told me, there would be at least fifteen feet of water in this well.

Luxumon Singh himself lives in a little mud fort in the village, which bears a partial enfacement of sand-stone flags.

On my asking why this facing with stone was incomplete, he said it was because "all the masons had died off since the month Bhadon."

The village of Laktullie is about six fields-breadth distant from Akia.

It had suffered in a less degree from fever, ten houses having been desolated out of a total of one hundred houses.

Thirty-five souls had perished from the fever, and twenty from cholera. There was a history of purging and vomiting of blood and of worms at this place, as at Akia.

Several of the kinsmen of the Thakoor, Bhugwunt Singh, had been swept away by one or the other of the concurrent epidemics of fever and cholera.

During the sickly season provisions were very dear in these villages, eight kutcha seers—equal to eight pounds—of atah selling for one rupee, and other cereals and pulses being equally costly in comparison.

The same story met me wherever I made inquiries, the same kind of disease similarly fatal; and the same tendency was everywhere shown by my informants, to mix up the epidemic fever with the epidemic cholera, in describing the symptoms of the former disease.

At Rutlaum I examined the native doctor of the Charitable Dispensary there, Anund Rao, as to the symptoms of the "Gujrati Beemari," and at last got an intelligible account of it, for he had treated six or seven cases of it, and he is a shrewd and intelligent man, gifted with a good deal of plain common sense.

There was no purging or vomiting of worms in the cases Anund Rao had seen, no purging of blood or vomiting of it, but there was cough, and *an expectoration of matters tinged with blood.*

The cases were of ardent fever without remissions, and were attended with congestion of the liver, producing pain under the ribs and jaundice, and with congestion, and probably, at times, with inflammation of the lungs producing difficulty of breathing, cough, *and bloody expectoration.*

The vomiting and purging of worms, described to me as occurring at various places, I explain thus.—Wherever I found the story of these symptoms, I found the story of cholera too, both the "Gujrati Beemari" and cholera prevailing *pari passu* at the same time and place, and the symptoms of the two diseases were confounded very naturally by the terrified survivors.

Now the vomiting and purging of cholera and choleräic diarrhœa, during the prevalence of those diseases in the months of June, July and August at Auggur, were attended with the voiding of these loathsome parasites—a new complication in my experience, and an unknown one in that of all the medical friends I have consulted *in hâc re.*

In the wing of the 28th Bombay Native Infantry under my charge at Auggur there were forty-one cases of cholera and diarrhœa admitted to treatment, between June 15th and August 10th, 1865.

In twenty-two of these cases, worms, of the kind known as "lumbricus teres," similar in appearance to the common earth worm, were voided by vomit or stool, or by both.

In one case of choleräic diarrhœa, occurring in a child aged nine years, no less than twelve large worms were voided. In each of two other cases ten of these disgusting tenants were ejected, one of the patients recovering, and the other dying.

I have no doubt in my own mind that this is the true explanation of the case—that cholera and the "Gujrati Beemari" prevailed side by side—that worms were voided in the cholera cases, as they were at Auggur, and that thus the objective symptoms of the two diseases become confounded one with another.

At Gungrar and Akia I had the opportunity of seeing three cases of the "Gujrati Beemari," all convalescent; there was no history of the voiding of worms in any of these three, they were cases of a very low form of remittent fever *without remissions*, if I may so express it, attended by engorgement of the liver and spleen, producing jaundice and pain in the side. There were no chest symptoms recognizable in any of the three cases, but then they were all in the stage of convalescence, when this complication, if it had existed, had passed away.

The vomiting of blood was, I believe, merely the bloody expectoration of "Pneumonia" (inflammation of) or of congestion of the lungs.

I have often been told by the friends of my own patients, that sick men have had vomiting of blood, when, on examination, such has resolved itself into the hawking up of matters tinged with blood, the very common attendant of inflammation or congestion of the lungs.

A clever Hukeem at Rutlaum who had seen many cases of the "Gujrati Beemari" told me that there had been blood-tinged expectoration in the cases he had attended, with cough and urgent difficulty of breathing; and furthermore, he told me that this same disease was described in certain of the Shasters under the name of "Mookhruckut-shraoo," which means "expectoration of blood."

He, too, told me, that the disease had prevailed in Guzerat, and had spread VIA PALEE to Malwa.

During the past year I have myself treated several cases (occurring amongst syces and mehturs of the 1st Regiment of Central India Horse) in the Cavalry Hospital at Auggur, of such a fever as I believe the "Gujrati Beemari" to have been.

There was continuous wasting fever without any attempt at remissions, lasting for several days, with congestion of the lungs and bloody expectoration, and great embarrassment of breathing, and with congestion of the liver and pain in the side and jaundice. These were very unpromising cases, but they were all cured by the resolute use of Quinine, with animal broths and alcohol, and by close attention to the personal cleanliness of the patients.

It is vain to wait for remissions in such cases in which to give the Quinine.

It must be given early in and throughout the cycle of the case, when the patient will ordinarily recover. To wait for a break in the cycle of the fever is to wait for the dissolution of the patient;—to give the drug in less doses than 10, 15, 20 grains, frequently repeated, is to trifle with the malady. Quinine is as sure an antidote for the bane of such a fever as it is in an intermittent, provided it be given unsparingly.

Briefly: I believe, this terrible scourge, the "Gujrati Beemari," to have been nothing more than a form, a very bad form, of remittent fever,—jungle fever,—with such internal congestions as were evidenced by jaundice, pain in the side, and occasional vomiting—pointing to the liver as the organ intercurrently engaged; or by difficulty of breathing, cough and bloody expectoration—the objective symptoms of inflamed or congested lungs.

The coincident prevalence of cholera with voiding of worms in the choleräic ejecta, has, in my belief, caused the symptoms of one disease to have been confounded with those of another.

As far as I know, there is no evidence of the "Gujrati Beemari" being *contagious*, but I cannot of course speak certainly on this point, until I have had an opportunity of seeing an epidemic of this disease on a large scale.

The yellow sweat that is said to have tinged the clothes of the patient of that colour is no new thing in the history of fevers. In the highly congestive form of the Edinburgh fever of 1843, these symptoms were remarked, and at Swansea, in the autumn of 1865, the occurrence of yellow sweating and jaundiced eyes in certain cases of fever made people think at the first that the veritable "yellow fever" was in England.

An interesting question that occurs to me is, whether or not this "Gujrati Beemari" be identical with the so called *Palee Plague.*

There is a short notice of the Palee Plague in "Honigberger's Thirty-five Years in the East," which prevailed in the autumn of 1838, as it had done during the three previous years.

The author says that an English physician, Dr. Keir, of Gogo, informed him (a native of Transylvania) that "the English physicians did not agree in their views respecting the plague at Palee: for some of them considered the disease to be a *pestilential fever peculiar* to India, whilst others declared it to be the same plague that was so common in the East, and especially in Turkey and Egypt."

Honigberger himself visited cases of the Palee Plague, and he writes: "The infected died generally on the third or fourth day, and scarcely one amongst twenty recovered." "I saw (he writes) carbuncles, buboes, bleeding at the nose—in one word, all that I had seen in the hospitals at Constantinople."—"I no longer doubted, therefore, that the disease was most virulent plague. It is true that it was not the plague of Turkey, Arabia or Egypt, but one peculiar to India; Palee being a province of that part of Asia."

Dr. Honigberger suffered himself from a slight attack of the plague, the prominent symptoms being *high fever*, with pain and swelling of the glands of the groin, and he was relieved by a profuse perspiration, so profuse, he writes, "that my matrass was wetted through."

He attributed this critical sweat to certain pills he had taken containing "Strychnos Faba Sancti Ignatii"—the bean of a tree of the Strychnos family.

The attack of the disease he attributed to the fact of his having inhaled the malaria of Palee, "generated by the exhalation of the immense marsh, whither thousands of birds and reptiles resort, and which serves at the same time as a depositary for all the substances ejected from the town."

It is very generally believed that the historical plague was a malignant fever, the stress of which was felt in the glandular system, leading to buboes.

The type of Zymotic disease is ever inconstant, and the stress of it may be experienced in any one organ or set of organs; in one series of cases in the lymphatic glands, leading to bubo; in another in the glands of the small intestine as in true typhus; in a third in the liver and lungs, as in the instance of the "Gujrati Beemari."

Diseases are not entities; they must be studied in relation to each other. The organs of our bodies are so interdependent, that they may any of them suffer in turn when the blood is poisoned by those subtle emanations that are only evidenced by the phenomena of their invasion of certain parts of the great whole.

I do not possess, for reference, the report on Palee Plague, drawn up, I believe, by Dr. Martin of the Bombay Medical Service, but it is my impression that he believes it to have been a malignant fever of an unusually fatal type; and I am confident in my own mind that although the local manifestations of the disease noticed by him may have differed from those I have described as attendant on the "Gujrati Beemari," still that the essential points of the diseases are identical; that they arise from similar causes, are aggravated by hunger, nakedness and dirt, and that the attendant phenomena are dependent on local and peculiar causes.

ART. IX.—*American Notes.* By HENRY KING, A.B., M.B., CH.L., Ex-Scholar, Senior and Junior Moderator, Trinity College, Dublin; L.M. Rotunda Hospital, Dublin; Assistant Surgeon, Madras Army.

SERIES III.

(*Continued from Vol. IX, page* 330.)

35. *Chloroform* v. *Ether.*—Few popular fallacies are more ridiculous than that which attributes the invention of anæsthetics to Sir J. Simpson. Passages occurring even in medical works make it doubtful whether the profession itself is altogether free from the delusion that the eminent Professor's principal claim upon the veneration of his professional brethren and the gratitude of mankind (and still more of womankind,) rests—not upon the services he has rendered to obstetric medicine, but upon his introduction of chloroform as an anæsthetic into the practice of Surgery and Midwifery. In these pages it is scarcely necessary to state that Sir J. Simpson did no more, in this respect, than prove, by a careful series of experiments upon anæsthetics, that chloroform, the anæsthetic properties of which were previously well known, might with safety and convenience be substituted for ether; that his claim even to priority in this discovery is plausibly disputed by a French physician; that the world, unless ether became extinct, could have got on very well without chloroform; and finally, that many French and the majority of American operators prefer and continue to employ ether.

The question of chloroform *v.* ether is not yet decided, and it is not an easy question to decide absolutely. The result of investigation and argument, so far as they have gone, appears to be, that while the risk of loss of life is really trifling when chloroform is used, it is still more inconsiderable when ether is employed. This is a decided advantage to the latter; which is, on the other hand, less convenient on many occasions. In the United States Army, for instance, during the civil war, chloroform was preferred on account of its greater portability*—so much less being necessary for the production of anæsthesia. In many private consulting-rooms, also, chloroform is adopted. In the Women's Hospital, New York, in the numerous operations for vesico-vaginal fistulæ, &c., &c., which I saw Dr. Emmett perform, anæsthesia, when considered necessary, was produced by chloroform: and the operator assured me one day that having been for years in the constant habit of administering chloroform, both in hospital and in his own "Office" without ever (until the previous day) having met with a single accident, he had come to believe that accidents resulting from this anæsthetic must be the result of mismanagement on the part of the operator. The case which shook his conviction illustrates the difficulty, I may say the impossibility, of determining beforehand the instances in which danger is likely to be incurred, and especial caution should be observed. A lady called upon him in his office for advice. She had inhaled chloroform frequently before; was even in the habit of taking it by herself to induce sleep. On this occasion, nevertheless administered most carefully by a practised operator, it proved all but fatal. Life was with great difficulty recalled by means of artificial respiration. The accident was unaccountable. The only guess that could be hazarded as to its cause was the fact that the patient's system had been, so to speak, saturated with opium; but the insufficiency of this explanation is obvious. From him also I heard of a case which had occurred not very long before in Paris. After Dr. Sims had operated successfully upon a hospital case of vesico-vaginal fistula, Nèlaton called on him to request him to see a very bad private case of his, which he had previously considered incurable by any operative means, and to operate, if there seemed a chance of success. After some months of preparatory treatment, Sims operated, the chloroform being administered by no less a surgeon than Sir Philip Crampton. As he proceeded he noticed a peculiarly congested condition of the vagina, asked if all was right, and found that the patient was *quam proximé* dead. She was restored to life with the greatest difficulty.

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* A Military Medical officer told me an anecdote illustrative not only of this statement, but of the ignorance of some of those whom it was found necessary to employ as Army Surgeons in a great emergency. An "Inspector" coming up, while one of his subordinates was cautiously administering chloroform *secundum artem*, himself accustomed to ether, exclaimed "that's not the way to give chloroform," and dashed the anæsthetic freely on the sponge. The patient died.

On the other hand, Dr. Emmett assured me that he had *never* seen any worse result from the administration of ether than vomiting and prostration—and these only after protracted anæsthesia. This agrees with the report of the Boston Committee which investigated the claims of the rival anæsthetics in 1861. A patient certainly did die under the influence of ether, in the New York Hospital, while I was in the United States. One carotid had been divided, and anæsthesia was induced in order to ascertain if any thing could be done. The surprise with which the news was received by the profession showed that such accidents were exceedingly rare. I was told that this was only the sixth on record, as occurring in New York.

36. *Chloroform in Photophobia.*—Visiting the New York Eye Infirmary with Dr. Agnew, the eminent Oculist—one of the few "specialists" of New York—I saw one of the most striking effects of chloroform illustrated; an effect which I had never heard of previously. In cases of phlyctenular, commonly called strumous, ophthalmia, intense photophobia is one of the most prominent symptoms. Putting the patient (generally a child) under the anæsthetic influence of chloroform not only enables the surgeon to ascertain the condition of the cornea while the insensibility lasts, but also completely removes the photophobia—always for a few hours, sometimes permanently. There is as little risk with children as with adult patients.

In connexion with the subject of the last Note, I may mention that Dr. Agnew had used chloroform for ten years in innumerable cases, both for examining and for operating on the eye, without having met with one accident. At the same time he was conscious that he was running a greater risk than if he had employed ether. He felt that with chloroform an accident might occur at any time. He preferred chloroform to ether for three reasons. Firstly, a less quantity of the former is required; ʒi. being nearly an equivalent of ℥iv. of the other. Secondly, ether causes more struggling before the supervention of anæsthesia, which, to a greater or less degree, congests the head; leading to a more considerable amount of hæmorrhage from the structures of the eye. Thirdly, patients awake sooner and more easily from the sopor of chloroform than from that of ether.

37. *Nitrous Oxide as an Anæsthetic.*—In November

1863, one Dr. Cotton, a dentist in good practice, advertised himself on a grand scale, by giving an exhibition of the effects of "laughing-gas" in one of the largest public rooms of New York, which (the admission-fee not being extravagant) was well-filled on the occasion. After some indifferent part-singing, the gas was administered to a dozen or more volunteers from the audience, with the well-known results, which were very amusing but need not be described here. The stage of excitement or exhilaration, which alone is reached in the ordinary use of the gas, is followed, if inhalation is continued, by a state of perfect anæsthesia, sufficiently lasting to permit the extraction of any reasonable number of teeth. This anæsthetic sopor was produced before the audience, and was manifestly suited to the purposes of the dentist. Dr. Cotton stated that he had extracted 6,000 teeth from patients under the influence of nitrous oxide, without their being conscious of any pain. He stated further that he had administered the gas in 20,000 instances without the slightest ill effect in any single instance. Its inhalation is followed by no re-action whatever—by no unpleasant sensation of any kind. There can, I think, be little doubt of the superiority of this anæsthetic to chloroform in dental practice. The dentist, I may add, is more exposed than other practitioners who use anæsthetics to the terrible risk of unfounded accusations by malignant or hysterical women. This risk would be obviated by the use of nitrous oxide.

The gas should be carefully made and pure. It should also be freshly prepared. From four to five gallons (contained in one large bag) will be sufficient to produce anæsthesia.

I must mention that Dr. Cotton's immunity from accident in the use of laughing-gas in dentistry is not universal. Ill effects resulting from its employment he would, no doubt, attribute to careless preparations of the gas, or to its having been kept too long before being inhaled. The following case occurred while I was in New York, and not very long after I had heard Dr. Cotton's eulogium upon nitrous oxide.

Samuel P. Sears, a merchant, aged 26, died at the "dental establishment" of J. Burnett, from the effects of laughing-gas, which had been administered for the purpose of extracting a tooth. Deceased had been suffering for a long time from "bronchitis and hæmorrhage of the lungs" and occasionally from tooth-ache. He went to Mr. Burnett's, inhaled (at his own request) nitrous oxide gas, and had the offending tooth extracted. He had apparently recovered from the effects of the anæsthetic when he suddenly complained of being ill. A Physician was immediately sent for; but the patient sank, and died in about two hours. The post-mortem examination, made for a coroner's inquest, showed that deceased "was a confirmed consumptive, both lungs being completely gone"—which strong language makes us wonder why he did not die sooner. The professional opinion, however, attributed the man's death to congestion of those non-existent lungs, accelerated by the inhalation of the gas; that if deceased had been in ordinary health, the accident would probably not have occurred; and that the condition of his lungs was such that the administration of the gas was highly imprudent. The jury "rendered a verdict" accordingly; exonerating the unhappy dentist from criminal intent, and adding one of those sapient recommendations in which Coroner's juries delight, that "an examination should be made by competent persons in all cases when it is contemplated to administer said gas."

38. *Military Hygiene.*—It is almost incredible that the state of things described in the following report could and did exist in the heart of the first city of the Union, in the third year of the war. Dr. Sayre, however, whom I have already mentioned more than once in these Notes, would be sufficient authority for more wonderful statements than these; and the accuracy of his description was attested by the Mayor, who visited the barracks in question subsequently to Dr. Sayre's inspection. No denial of the facts was attempted, with the exception that the assertion, contained in one of the concluding paragraphs, that the state of affairs had been brought to the notice of his superior officers by Dr. Blanvelt without effect, was said to be mistaken.

"To the Honorable C. Godfrey Gunther, Mayor and President of the Commissioners of Health,—

"DEAR SIR,

"In obedience to your request of this date I have visited the barracks in the Park, and present the following report:—

"The barracks on the Broadway side are 400 feet long by 30 wide, under the charge of Captain Hicks, who has three assistants to keep it clean. This is used as a sort of boarding-house or hotel, for the various soldiers in their transit through the city to and from the seat of war. At the present time 800 men are accommodated there, independent of the Provost Guard, who occupy the lower portion of the barracks, and the number of which I could not ascertain. The building is not constructed with sufficient regard to ventilation in cold weather or means of warming; and as they have but three assistants, it is impossible to keep it clean, with 800 men tramping out and in with snow and mud upon their feet.

"It would require at least fifty men to do justice to the place; and in camp, under military discipline, it would take the whole 800, as each man would be compelled to police his own quarters, as should be done; but here they are simply boarders or guests in an hotel, to be waited on and cared for, instead of caring for themselves, and as the superintendent has no control over them, and as there is an entire absence of military discipline, some of the companies having no officers at all, as a matter of course, the building is much more dirty than it should be, but is kept as neatly as can be done, under the circumstances, with the amount of force employed; and unless the soldiers are compelled to police their quarters, the same as in camp, it will require, instead of three assistants, at least fifty, and these by constant labor, would not more than do the work in muddy and wet weather.

"Between these barracks and those on the Park-row side are arranged the water-closets, which were constructed for summer use only, and of course are entirely unsuited for this cold weather, and absolutely require an entire reconstruction, as they are now constantly frozen up.

"In the Park-row side a small room for the officer in charge and the medical attendant is cut off from the lower corner of the building, embracing one-half its width and opening into the barracks.

"Immediately behind this room a part is partitioned off, which the doctor very properly denominated the "pen." This pen is 15 feet wide, 20 feet long, 8 [?] feet high to the peak, and 8 feet to the eaves, boarded up on three sides tightly; the fourth, which faces into the barracks directly opposite an immense stove, which is heated to a red heat, is separated by slats four inches wide, and placed three inches apart.

"In this fifteen feet by twenty there is not a bench, or stick of wood, or anything to sit on, not even a post to lean against, except the four perpendicular sides of the room. There is not even straw to cover the floor, as a hog or horse would have; but the accumulated filth of many months is the only thing that separates the inmates from the naked floor. In this pen are confined at the present time sixty-one men, and the officer in charge informed me that he had at one time as many as seventy-seven. Some of the men have been there from three to four months. They are thus imprisoned for various military offences, breach of discipline and desertion,—all huddled in this common pen, sick and well together. A guard is placed over them to prevent escape, and another guard is in waiting to accompany them to the water-closet in the Park, one at a time. The other seventy-six must wait their proper turns, no matter how pressing the necessity, from dysentery, diarrhœa or other cause; and of course the result of such barbarity can better be imagined than described.

"These men are fed through the bars, taking the meat and bread in their fingers, no knives or forks being allowed. Spoons are allowed once a day when they have soup. No blankets are allowed them, unless they happened to have one themselves when placed there; and but few of them are thus fortunate; they have therefore to lie upon the naked floor, with the exception of the accumulation of filth and mud before referred to.

"The doctor informed me that by laying them upon their sides in spoon fashion and by close packing, putting the heads of one row on the bodies of the row in front, he could pack forty-five in the pen. The rest are now taken out and chained to trees until these forty-five have had some sleep, and then they were transferred.

"The only mode of cleaning the apartment was by running in croton water from a hose through the slats, which forced the bones, pork-shins, potato-skins, &c., to the back and corners of the room, and, as it is nearly level, they remain there, and in some places are near an inch or two in depth.

"The men are covered with lice and vermin, and the stench was almost unbearable.

Dr. Blanvelt, who was in attendance, and who is a kind-hearted, honest, faithful man, informed me that he had repeatedly reported the nuisance as graphically as possible to his superior officers, General Canby and General Dix, and demanded redress; but up to the present time without any avail.

General Dix himself personally visited this place a few days since, and can, therefore, certify to the accuracy of my description.

This pest-hole is an outrage on humanity, a burning disgrace to any nation, and ought not for one moment to be tolerated.

If the general government choose thus to outrage humanity and treat their soldiers worse than wild beasts, in God's name, let them take them away from the city and put them on government property, and thus assume the responsibility for the outrage; but do not permit the city any longer to be disgraced by allowing them to occupy its grounds and on them practise such horrid barbarities.

Very respectfully, &c.

Lewis A. Sayre, M.D."

39. *Cerebro-spinal Meningitis.*—An epidemic of this disease broke out at Long Branch, (Long Island) while I was in New York, and Dr. Sayre was requested by the Mayor to visit the place affected, with Dr. Murphy, the Health Commissioner, and to examine into the character of the disease. Dr. Sayre subsequently made a report on the subject to the Academy of Medicine, but the following brief notes are taken from a newspaper account of the report sent in to the Mayor of New York.

At the date of the Commissioner's investigations, which continued for two nights and the intervening day, ninety cases had occurred, of which thirty-seven had terminated in death. The disease began with a rigor, and the "first stage" lasted about sixteen hours. During this stage many died. The second period lasted two to three days, after which convalescence may commence. The most alarming symptoms were congestion of the brain and paralysis; which, while persistent, render remedies ineffective. The disease was neither contagious nor infectious. It was not obviously dependent upon any special atmospheric conditions. There are no swamps or stagnant water in the neighbourhood of the place where the epidemic existed. The soil is sandy, and the whole locality freely open to the sea-breeze. In fact, Long Branch is a fashionable bathing-place, and free from all suspicion of unfavorable sanitary conditions.

It was ascertained that the diet of many who had been seized by the disease had been unsatisfactory. Flour made from spoiled grain had been used as an article of domestic consumption; and as a substitute for coffee smutted rye had been consumed to a considerable extent. Again, it is the custom of many families to burn kerosene lamps all night, the wick being put down. This practice vitiates the air, and fills the sleeping rooms with impure gas. Every case of the disease, (and every case existing at the time of the Commissioners' visit was examined by them), could be traced to distinct causes,—the depression of the system by improper food, by breathing foul air, or by fear and moral influences of a dispiriting character. Exposure to cold or fatigue sufficed to bring on an attack in those thus predisposed.

40. *Extension by Adhesive Plaster.*—Dr. Gordon Buck, of New York, introduced the treatment of fractures by extension effected by means of adhesive plaster. So long ago as 1855, I saw this method applied, in the New York Hospital, to a case of fractured neck of the femur, under the care of Dr. Van Buren; who remarked to me that it was not easy to get improvements adopted at the eastern side of the Atlantic. This great addition to the curative methods of the surgeon has, certainly, made but little way. Seven years after I had seen the case in New York an article appeared in *The Lancet,* describing the means used in that city, with great success, for treating fractures of the neck of the femur, as well as other fractures. I doubt if any notice was taken of it. Nothing can be more simple than the apparatus for extension. A band of sticking-plaster (that made with canton flannel is the best for the purpose) is attached along the inner and outer side of the limb, forming a loop below the foot. A bandage is applied to the leg, over the plaster. A thin piece of wood is laid in the loop, to which a cord is fastened. This cord passes over a pulley at the foot of the bed, and bears a sand-bag or other weight, variable according to circumstances. The plaster rarely causes any irritation of the skin, none of any consequence, ever.

Another most valuable application of this method has been made, conspicuously by Dr. Sayre; namely, to the treatment of diseased joints; especially those of the hip and knee. In the ulcerative stage of disease extension made in the manner above described not only gives perfect and immediate relief from pain—due to the apposition and friction of the affected cartilages—but affords opportunity for the complete restoration of the diseased surfaces. Some of the cures which came to my knowledge, effected in this way, were wonderful. Again, the result of the application of this method to older cases is not less gratifying. Two of these, under the care of Dr. Sayre, I was fortunate enough to see. In one, a young woman of 23, extreme flexion of the thighs had existed for 17 years, rendering the patient completely a cripple. The muscles of the thighs were divided, and by means of weights subsequently applied, the limbs were restored to their natural position. At the time of my visit the condition of the patient had been improved to an extraordinary degree; and I could not doubt that she would ultimately recover entirely the use of her limbs. In the second case extreme flexion of the leg upon the thigh was treated by extension only. The child still wore a simple apparatus, keeping the joint extended; but was able to run and play about, without pain or any appearance of lameness.

41. *Artificial Hip-joint.*—In a paper read before the New York Medical Society in 1863, and afterwards printed as a pamphlet, Dr. Sayre published two cases in which he had performed "a new operation for artificial hip-joint in bony anchylosis." I hope the following very much condensed abstract of these cases may prove interesting.

R. Anderson, aged 26, was admitted into Bellevue Hospital in May, 1862. During the summer of 1849, (being then 14,) accustomed to bathe every evening in a river, on one occasion, after severe exercise in running and jumping, he remained in the water for several hours. About the middle of September he felt a dull pain in the right hip, so gradually developed that no definite time could be assigned for its commencement. For a week he continued to attend school and to play as usual; until one day, after having taken more exercise than usual, he was attacked by fever. Next day stupor supervened, and lasted, with intervals, for nearly three weeks. He was capable of being aroused, but was indifferent to everything which happened around him, unless when so stimulated. Intense sharp and lancinating pain was felt in the right hip, which was hot, red, and greatly swollen. The tumefaction extended half-way to the knee. After a month this swelling had subsided considerably; pain was much less, though still very severe when the joint was moved. No pain was at this time felt at the knee.

Then commenced pain in hip and knee of left side; dull, never lancinating as at the other side. This continued for two months.

Ten days after the beginning of the disease, pillows were placed under the patient's knees to relieve the pain. These were subsequently increased in thickness, and their use continued for the six months that he remained in bed. During the next six months, he occasionally sat up in a chair; but while in bed the pillows were constantly applied. The consequence of this treatment was that the legs were flexed upon the thighs, the thighs upon the pelvis, and so remained. During these twelve months occasional pain was felt in both hips, more severely in the right.

At the end of two years from the date of the attack, an abscess formed in the left groin, which discharged for two years. Others formed about the right hip—one beneath the gluteal muscles, one near the anus—and continued open for about eighteen months, discharging freely. For six or eight years previous to admission his general health had been perfectly good. His condition on admission is thus described. "The left thigh was immovably fixed at nearly a right angle with the pelvis, by bony cementation of true anchylosis. The right was very firmly attached at an angle not quite so acute, and by a very careful examination I thought some slight motion could be detected which indicated that the attachments were fibrous in character, or at most were osteophytes only, and external to the joint, and that there was no agglutination between the femoral head and the acetabulum, whereas the opposite side seemed perfectly cemented together. He could not walk, except by whirling himself in semi-circles, first on one leg as a pivot, and then the other—or else by swinging himself on his crutches from the axilla. In order to get both feet upon the ground at the same time, his back was curved inwards very much at the sacro-lumbar junction, the left knee flexed at an angle of about 45 degrees with the thigh, and the right side of the pelvis was some inches higher than the left. He could only sit by assuming a most awkward posture, half reclining on his side upon a couch or sofa; and in lying down, was curled up either on one side or the other, or if upon his back, he had to be supported by pillows under his knees, and under the lumbar vertebræ. In fact, he was the most pitiable object I ever saw, and one that would excite the sympathy of any surgeon."

On the 4th May, 1862, Dr. Sayre divided subcutaneously the adductors, rectus, tensor vaginæ femoris, and femoral fascia on the right side, broke up the adhesions by the exertion of considerable force, and obtained good motion of the joint. Extension was made by weight and pulley, and the hip enveloped in wet cloths. No serious trouble followed the operation, and in six weeks he could flex, extend, abduct and adduct the right limb, with considerable freedom.

A different procedure was adopted for the relief of the deformity of the left hip. Dr. Barton of Philadelphia had been the first to operate in a case of this kind, by making a V section in the shaft of the femur, and thus bringing the limb down parallel to the other, and obtaining anchylosis in an improved position. This operation was subsequently performed by Dr. J. K. Rodgers of New York, with equally good results, differing, however, from his predecessor by making the section somewhat higher up in the shaft. The procedure adopted by Dr. Sayre in Anderson's case was essentially different in its object; which was, not fresh anchylosis, but the formation of a new joint. His section was made above the trochanter minor, so as to retain the insertion of the psoas magnus and iliacus internus attached to the lower part of the bone for the purpose of flexion; the form of the section was also different, being semi-circular, with the concavity downward. By cutting out a semicircular piece and rounding off the end of the lower section, he expected to imitate more nearly the natural joint, and give the patient a better chance of motion at that point, with less danger of the parts slipping by each other when he walked, than if the exsected portion were cylindrical or wedge-shaped. It is unnecessary to give the details of the operation which was performed on the 11th June 1862. The limb was subjected to moderate traction longitudinal and lateral, the edges of the wound drawn together by straps of adhesive plaster, and cold-water dressing applied.

The patient did well after the operation. Considerable pain was felt occasionally, relieved by modifying the degree of traction. On the 1st September all extension had been removed and the man sat up. His general condition was very good, and he had gained very much in flesh since admission. On the 12th October he was able to walk round the hospital on crutches, which had to be lengthened seven inches, as he had become quite straight since the operation, except for the lateral curvature of the lower lumbar vertebræ, which raised one side of the pelvis and made the right leg apparently shorter than the left, from which the segment of bone had been removed. He could sit down and rise up with the help of his crutches only. He left the hospital in good health and with very good motion in both hip joints. About three weeks afterwards he was attacked with acute pain in the site of the wound, which became inflamed and suppurated. In a few days a small semi-circular piece of bone came away, and four days later another similar fragment—the two together forming almost a ring, and being apparently exfoliations from the lower section. The pain then ceased and the wound healed rapidly.

Late in December he left for his native State, Kentucky. He could then "go up or down steps without difficulty; could stand on either leg without crutch or cane; could take a step with either foot 27 inches, and when he supported his body on his crutches, could abduct his legs so that his heels were 36 inches apart. He could cross either leg over the other below the knee, without assistance, but could not cross them upon the thigh." On April 11th, 1863, (just ten months after the operation) he writes: "I can now 'rough it' a little without apprehension of having to suffer for it afterwards. I can bear my whole weight on my left leg without inconvenience, and can walk very well without other assistance than a walking-stick, and the improvement is as great in a month now, as at any previous time."

This concludes the case in Dr. Sayre's pamphlet, and I am sorry that by a strange coincidence, I have to add an appendix. On the 23rd March, 1864, I received from Dr. Sayre a copy of the tract before me; and while I was in his office, Anderson himself came in unexpected by any one—and alas! *on crutches.* He had been again attacked in the country with inflammation in the left hip, had been injudiciously treated, and now presented firm anchylosis of the left hip-joint. No doubt this result was a source of deep disappointment to both patient and surgeon; but it does not materially detract from the value of the operation, on account of which I notice the case. Irrespectively of the operation for false joint the treatment was eminently successful, though to appreciate fully its success would require the opportunity of comparing the ultimate condition of the man with the miserable state in which he passed about ten years of his life. Such opportunity I enjoyed through accurate drawings of the patient made at the time of his admission into Bellevue Hospital.

The second case recorded in Dr. Sayres' pamphlet was, though the patient died, (from a cause unconnected with the operation or the disease), decidedly successful. I was fortunate enough to see the preparation of the parts concerned.

Susan Losee, aged 24, of vigorous constitution, was attacked by pneumonia in March, 1856. After three weeks she went down stairs, (contrary to medical advice); and on the following day suffered intense pain in left hip and thigh, which lasted without intermission and with great severity for several months. She was not conscious of having sustained any injury, but it was supposed that being very weak, and going down stairs without assistance, she had in some way wrenched the joint. During the first few weeks her limb remained extended, and could not be flexed, abducted or adducted without intense suffering. Bed sores had now formed to such an extent that it was absolutely necessary to change her position. In effecting this the limb was forcibly flexed at hip and knee, at the cost of dreadful suffering: rather than repeat which by re-extending, the extremity was left in its new position. New sloughs appearing over the right trochanter, she was placed in a large chair, in which she was left for two months, until sloughing occurred over the tuber ischii, and at the extremity of the coccyx. She was thus compelled to resume the horizontal posture; and having to lie on the right side, the left thigh was thrown over the right, in a flexed position; and became perfectly anchylosed, thus, in seven months from the commencement of the disease. No local application had been made to the hip, nor any extension employed to obviate muscular contraction and consequent deformity. Pain was combated by narcotics, principally morphia. When she recovered (if the word can be used) " her left thigh was permanently flexed, at about 40 degrees with the pelvis, and adducted across the lower third of the right thigh. In the erect posture, the heel of the left foot was 10½ inches from the floor, and to the right side of the right leg. In attempting to walk, it was brought to the floor, still on the right side of the opposite limb, or cross-legged; and was made to reach the floor by a remarkable curvature forward of the lumbar portion of the spinal column: but walking was attended with great fatigue, and a peculiar dull pain in the lumbar region." The urine produced constant excoriation of the limbs, and it was found impossible, though persevering attempts were made, to introduce a catheter.

In this miserable condition the girl remained for seven years. In 1861, she placed herself under the care of Dr. Taylor who practises the so-called "Swedish-movement" cure with success. He believed the anchylosis to be fibrous merely, and curable by "passive motion;" but he failed to effect any improvement in the patient's condition, his diagnosis of the nature of the case being mistaken. She then came under Dr. Sayre, who in April, 1862, made a subcutaneous division of the muscles concerned. The operation was followed by no inconvenience, but also by no advantage whatever; and it was determined to remove a piece of bone, as in Anderson's case, with a view to the formation of an artificial joint.

On the 6th November, 1862, the operation was performed, almost as in the former case. The exsected semi-circle of bone measured one-eighth of an inch at the front or internal margin, three-fourths at its middle, and nearly half an inch at its external margin. It was very dense in texture. About two ounces of blood were lost, and no ligature was required. Adhesive plaster was attached below the knee for the purpose of making extension, and a bandage applied firmly from the toes up, pelvis included. The foot of the bed was raised twelve inches higher than the head, and extension made by a weight in the usual way. Lateral traction, (to keep the upper end of the femur from pressing on the femoral vessels,) was applied by means of a broad band passed round the thigh and a cord attached to its outer aspect, to which a weight was appended. By these means the limb was brought to be parallel to the other and apparently of equal length.

I must omit details of progress. On the 1st March, four months after the operation the wound was perfectly healed and closed—two small pieces of bone having escaped; the limbs were parallel and symmetrical, except that the left was nearly three-quarters of an inch shorter than the right, when her weight was rested upon it; "but when she stands erect on the other leg, it falls down, and is nearly, if not quite as long as its fellow." By upward pressure it could be shortened half an inch. Concussion gave a smooth sensation to the hands, without crepitus, or pain to the patient. She began to have control over the movements of the limb, and could bear nearly her whole weight upon it. The operation had unquestionably succeeded in its object.

It is unnecessary to trace the patient's downward progress, partly the 'result of her own imprudence,' partly due to excessive doses of codeia administered by a careless nurse. She died exhausted by narcotism following pneumonia, on the 17th May. The post-mortem examination showed not only that death was altogether unconnected with the original joint-disease and subsequent operation performed for its relief. It afforded, moreover, a most remarkable instance of what, for want of a better name, we call the reparative power of nature.

The artificial joint was found to be provided with a complete capsular ligament. The articulating surfaces were tipped with cartilage and furnished with synovial membrane. The conjunction of the surfaces was perfected by the formation of two round ligaments, springing from the new acetabulum, which, converging to one point of attachment on the head of the femur, constituted a new ligamentum teres. The whole of the old joint was united in one solid bony mass.

Dr. Sayre's paper concludes with an account and figures of an un-united ulna. He exsected the false joint, seventeen months after the fracture had occurred, and it was found to present all the characters of a natural articulation.

42. *Swedish Movement-Cure.*—Dr. Taylor, whom I had occasion to mention in last Note, has been very successful in the application of this remedy to the restoration of paralysed muscles. Combining a regular medical education

with great mechanical ingenuity, he has rescued a powerful therapeutical agent from the exclusive possession of chartatans, in whose hands, so far as I am aware, it is still left by our brethren in England. His rooms in Fifth Avenue contain a number of machines, invented or improved by himself, and intended for the gentle and gradually increasing exercise of muscles which have lost their power partially or wholly. These instruments are varied in form to suit the various parts requiring their aid; and the metal weight which produces the resistance to be overcome, can be altered in position, and so in power, in order to accommodate it to each particular case. I saw one of these machines in action upon a little hemiplegic girl whose digestion was torpid. A pad fixed upon the abdomen received, by means of a wheel, a rapid motion from side to side, thus "kneading" the viscera. To this practice Dr. Taylor attributed great success in the treatment of dyspepsia—the operation being continued for a quarter of an hour, once or twice a day. To see this process going on is apt to provoke mirth, but I believe it is a useful one.

The only cases which Dr. Taylor considers himself unable to benefit are the syphilitic—when the paralysis depends upon venereal inflammation and thickening of the membranes of the chord. Paralysis following apoplexy or injury, that dependent on uterine disease, or semi-imaginary hysterical cases, invariably derive advantage from the treatment; and patients are continually recommended to seek Dr. Taylor's aid by the leading practitioners of New York. The use of internal remedies is not excluded, but he attaches little importance to them except as palliatives. His practice lying almost altogether amongst the wealthier classes, he has never had an opportunity of applying his special treatment to a case of lead-paralysis. The experiment would be both interesting and valuable.

43. *Typhus.*—Dr. Emmett, now well-known as the successor of Dr. Sims in the Woman's Hospital, and his rival in the surgical treatment of vesico-vaginal and kindred fistulæ, was, in the early part of his professional career, the first (and organizing) physician of the Emigrant's Hospital. Here he remained for several years, seeing about 13,000 cases of typhus, of which a large proportion were "ship-fever." He would seem to have been very successful in his treatment, the deaths being reduced to 4 *per cent.*

He depended mainly upon stimulants, guided by the state of the heart; but he attached much importance to the practice of shifting the patient's position—from side to side or back—every twenty or thirty minutes, night and day. By this means hypostatic pneumonia was avoided.

Dr. Emmett recognises no essential distinction between typhus and typhoid. He observed that of persons exposed to the same miasmatic cause of "ship-fever," the German immigrants, almost without exception, exhibited abdominal complication, (or typhoid;) the British and Irish, cerebral.

On one occasion the State Legislature heard of his "barbarity" in having a large number of sick in sheds, not very well protected from the weather—where, however, the death-rate was little over 4 *per cent.* A committee investigated and ordered the removal of the sick to a "comfortable brick building." This was effected; and the mortality rose to nearly 60 *per cent.* Similar facts were observed in Ireland in 1847 and following years.

44. *Radical cure of Procidentia Uteri.*—Dr. Emmett's operation is a modification of Sims', which is itself a modification of Marshal Hall's. I had only once an opportunity of witnessing its performance; and I fear I shall not be able to describe the operation intelligibly without a figure. On the posterior wall of the vagina *a triangle* is scarified (not a triangular space but a triangle in outline) having its base transverse and below the cervix, its apex pointing towards the outlet. The sutures are passed beneath the raw sides of the triangle, over the intermediate un-scarified part. These when drawn up bring into contact the two halves of the base of the triangle, and the two sides along their entire length. The raw surfaces coalesce, and also probably the intervening unscarified parts.* If all the sutures hold, the cure is complete and satisfactory, and I saw one woman on whom this operation had been performed, who had subsequently borne a child without disturbance of the stability of the adhesions. In her case, the perinæum had been absorbed, in consequence of the constant pressure of the protruded uterus, (which, I may add, though completely external to the vulva, contained when she was first seen a fœtus of two months.) On the other hand, one or more

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* I saw one case in which a urethra had become permanently closed through disuse alone—thus proving that mucous membranes will become adherent sometimes.

of the sutures may cut out, and the cure may then be incomplete or lack permanence; as occurred, indeed, in this very case which I saw about two months afterwards. Two sutures had cut out; and, in consequence, there was a prolapse of the tissue which ought to have been doubled up behind the line of union. The upper band held fast, and kept the uterus in position; but there was a probability the prolapsed mucous membrane would increase in amount, and render a second operation necessary to get rid of it.

The operation lasted two hours, and seventeen silver-wire sutures were inserted. Ether was not used, the patient consenting to bear the pain. The vomiting which sometimes follows etherization may cause sutures to give way. The patient bore the tedious operation with wonderful fortitude.

45. *Lithotomy through the Rectum.*—I am not sure that the profession in this country ever heard of this operation. Dr. Emmett, however, told me that he had no doubt not only of its superiority to the ordinary operations for the removal of stones from the bladder, but also of its ultimate adoption universally. Of course he would naturally have a leaning to a procedure to which the use of Sims' speculum and the skilful insertion of silver sutures are essential; but his opinion is supported by the extraordinary success of this method in the solitary case in which it had been tried in New York. The operator, Dr. Bauer, had first ascertained by many careful dissections that, in all cases, *at least* one inch of the anterior aspect of the rectum is uncovered by peritonæum, and that this free space not unfrequently extends to one inch and a half.* Having secured Dr. Sims' valuable assistance for the insertion of the sutures after the removal of the stone, Dr. Bauer extracted it through an incision made through the rectum at the part indicated, and the case recovered perfectly. It is important to add that the subject was an old man, of broken constitution, and in condition so unfavorable for sustaining an operation for lithotomy, (his pulse being 120 when he was placed upon the table), that Dr. Sims disapproved of its being attempted. The experimentalist, however, had brought together

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* In cases of retention of urine requiring puncture of the bladder, English, American and French Surgeons, almost universally, I believe, prefer operating through the rectum. In Vienna, on the contrary, the puncture is made above the pubes.

a number of professional compatriots, (Germans) to witness his skill, and could not be induced to postpone the operation. The experiment was made, in spite of adverse circumstances, and the issue fully justified Dr. Bauer's determination.

46. *Enormous Calculus.*—The venerable Dr. Mott, the greatest and best-known of American Surgeons (who died in April, 1865) told me that he had extracted the largest stone which he had ever seen or heard of as removed from the living human bladder. It weighs sixteen ounces with penny-weights and grains, bringing the weight nearly up to seventeen ounces. He removed it with forceps resembling the obstetrical instrument—each blade being inserted separately.

47. *Silver Suture.*—Dr. Marion Sims' invention of the silver suture has already been the means of relieving hundreds of women from loathsome and previcusly incurable infirmities. It is much to be regretted that this improvement is making so little way in general surgery. The following cases, to which many might be added, show what advantages may be obtained from the use of silver wire, instead of silk ligature, in other operations than those undertaken for the radical cure of vesico-vaginal fistulæ, &c.

Dr. Emmett once removed a cancerous breast, of such dimensions that the external wound measured nineteen inches in length. Eleven arteries were tied *with silver wire.* The external wound was closed with one wire, in whip-stitch. The woman was up in one week after the operation. Four months afterwards the external wire was removed, because it interfered slightly with her employment as a laundress. It was causing, and had caused, no irritation whatever. The parts had healed by first intention months before. The wire ligatures remained inside, and produced no irritation either. The woman having died, fourteen months after the operation, they were found encysted and harmless.

A Washington Surgeon, visiting the New York Woman's Hospital took away some of the silver wire used in that institution. Shortly after his return southwards, a citizen and a congress-man had a "difficulty" in a street or barroom, and one (I forget which) drew a bowie-knife across his adversaries abdomen, giving free vent to his intestines.

Operation for Cataract, anterior, of Saunders	5	„
„ „ popliteal aneurism	20	„
„ „ carotid „	40	„
„ „ inguinal or external iliac.	40	„
„ „ brachial „	10	„
„ „ radial, tibial or ulnar „	5	„
Lithotomy	30	„
Bronchotomy	5	„
Trepanning	20	„
Circumcision	2	„
Common case of midwifery	from 5 to 7	„
Tedious or difficult case	„ 7 to 12	„
Case of gonorrhœa	„ 3 to 6	„
„ syphilis	„ 5 to 20	„
Preparing and administering enema	8	shillings
Visit on board of vessel at wharf	10	„
„ „ „ in stream	1	pound.
For an opinion involving a question of law, and in which a physician may be subpœnaed	1	„
Extracting a tooth at patient's house	8	shillings.
„ „ surgeon's „	4	„

ART. X.—*Extracts from the Annual Medical Report of European and Native Troops at Secunderabad.* By Deputy Inspector-General of Hospitals E. BALFOUR, Esq.,

Communicated by the Principal Inspector General, Medical Department.

THE Grand Trigonometrical Survey of India determined Secunderabad to be in Latitude 17° 20·7′ north; Longitude 78° 28′ east; and 1830 feet above the level of the sea. It is the largest Military Station in Southern India, the largest perhaps in any part of India, and is composed of the following arms and strengths:—

1 Regiment European Cavalry.
1 do Native do
2 Regiments European Infantry.
1 Battery Royal Horse Artillery.
2 Batteries Royal Artillery.
1 Field Battery do.
3 Regiments Native Infantry.
2 Companies of Sappers.
Ordnance and Commissariat Public followers.

This force is the Subsidy which the British Government, under the Treaty of 1801, furnishes to the Nizam of the Dekban as a part of the Military Establishment of the Hyderabad Territories; the Ceded Districts, now forming the Collectorates of Cuddapah and Bellary, having been ceded under the same treaty to the British Government, to provide the pay of this force. On the other hand the Nizam furnishes a Military Contingent, composed of—

4 Regiments of Native Cavalry.
6 do do Infantry.
4 Light Horse-field Batteries of Artillery,

which are spread over the Hyderabad country.

* * *

From 1801 until recently, the bulk of the Hyderabad Subsidiary Force were lodged in barracks and huts in a line about three miles long, extending from the villages of

Russulpur and Begampet on the west, to the second milestone on the old Madras Road. * * But in the past seven years the European troops have been gradually occupying ground more to the north easterly from the hamlet of Trimulgherry. Already two regiments of Infantry and two Batteries of Artillery are there, and the remaining Europeans, viz., a corps of Cavalry and two Batteries of Artillery will be moved to the north as fast as accommodation can be provided. It is, however, not probable that all the changes will be completed within the next decade. The whole cantonment is, therefore, in a state of transition. * * At present the sites, on which both the European and Native troops are placed, are wide apart. The Horse Artillery on the extreme south-west are about five miles from Eman Zamin Hill, near which two Batteries of Artillery are placed, and about three miles from the European Cavalry on the right flank.

Merely to describe it, therefore, as in Latitude 17° 20′ north, and in Longitude 78° 25′ east, would give no idea as to the character of a Cantonment which is spread over about nineteen square miles.

* * *

Movement of Troops.—The position of Secunderabad is almost in the centre of the peninsula, being 221.3 miles from the sea coast at Masulipatam on the east, and from Vingorla on the west about 350 miles. In a military or sanitary point of view this is of importance only in connection with the facilities for moving troops or removing the sick. Until the last few years the sick and invalids at the close of the year were moved by day's journeys under canvas, 400 miles, to Madras, and for troops in health marching in tents was the only mode of moving. About 1857, however, transit in sick carts began to be adopted, and the route via Masulipatam and by sailing or steam ship to Madras was then chiefly followed. Within the past few years railroads have been opened from Bombay to Sholapoor, 197 miles from this, from Madras to Cuddapah 256½ miles, and from Madras to Bangalore 201 miles, changes which have already greatly modified the routes selected in journeys to and from this place. The north-west line of Railway from Madras to Bombay is in rapid progress between Cuddapah and Sholapoor; that from Madras will be opened on 1st August 1866, to Moodanoor, 291½ miles from Madras, and as a branch will doubtless ultimately join this place, the existing routes will be still further modified.

Secunderabad to	Miles.
Sholapoor...............	197·
Kurnool...................	133·3
Cuddapah via Kurnool..	256·5
„ „ Gooty.....	292·7
Bellary......................	229·7
Bangalore..................	292·7

There is, however, no immediate prospect of a branch line to this place, and at present the nearest point of any railway from this will be Raichore in the Kistna and Tumbudra Doab, about 137 miles from here. Kurnool, 133 miles, is about the same distance, but the nearest station to Kurnool will be Ampree, 50 miles, and the next nearest Ghooty 56 miles off, so that the journey via Kurnool to the rail will be 183 or 189 miles, against 130 via Raichore. And it is very advisable that preparations be commenced for traffic through Raichore. At present, as the bullocks on the line are the best trained in the south of India, the favorite route to the south, alike for troops and sick people, is via Kurnool, Bellary and Bangalore, from which the railroad becomes available to the Sea Coast, to Bangalore, to the Shevaroy or Neilgherry Hills.

Buildings.—Under the orders of G.O.C.C. No. 83 of 9th May 1865, heads of departments are required to send in, for the examination of a Committee, a list of all buildings required to complete the accommodation of their respective regiments and departments. It was necessary before making any recommendations on such a subject to ascertain what buildings were already in progress and what sanctioned. The following are three lists of works in progress; works sanctioned; and works needed; and these more than any description will explain the vast extent of accommodation still needed to lodge properly even the two regiments of Infantry and two Batteries now at North and South Trimulgherry.

List of Military Buildings actually in progress.

A. Conservancy.

Blasting and removing Rocks.

B. Sanitary.

Granite flooring to Public Buildings.

Water-supply 1st Regiment European Infantry.

Building separate Washing rooms for European Infantry.

Erecting privies for Half Company Barracks, 2nd Regiment European Infantry.

Sinking a well for a Battery of Artillery at Trimulgherry.

Erecting wash houses for Half Company Barracks, 2nd Regiment European Infantry.

Erecting Cook-rooms for do. do.

Building aqueduct, &c., for raising water-supply for do.

Separate Bath-rooms, Family Quarters 2nd Regiment.

C. Accommodation.

Erecting Family Quarters for Royal Artillery.

Adding cells to Prison accommodation.

Applying perforated zinc to all the field Barracks.

Erecting Half Company Barracks, 2nd Regiment European Infantry.

Numbering Public Buildings of 1st Regiment European Infantry and of Artillery.

Erecting out-houses to Family Quarters, Royal Artillery.

Erecting double storied Half Company Barracks of Artillery; out-houses to do.

D. Amusement.

Erecting Fives Court for Artillery.

Do. 2nd Regiment European Infantry.

E. Religion.

Erecting Roman Catholic Church.

List of proposed or sanctioned Public Buildings for 1866-67.

Water-supply for 2nd Regiment and General Hospital.

Out-houses to Barracks, 2nd Regt. European Infantry.

Serjeant Major's Quarters do.

Staff Serjeants, second class, A. and B. do.

Horse Hospital for Royal Artillery.

Major's Quarters do.

Captain's do do.

Additions to Captain's Quarters, 1st Regiment European Infantry.

Female Hospital for two European Regiments.

Alterations and improvements to Arsenal.

I now subjoin the *List of Buildings, which I consider to be needed for the military of this station,* and which I have recommended.

Royal Artillery.

No. 1.—Hospital needed for the sick of 12 per cent. of 520 men, viz., 62·40 sick = 6,240 superficial feet.
„ 2.—A small native hospital for the native public followers, as per Governor-General's orders.
„ 3.—A women's hospital or maternity for.

European Infantry.

„ 4.—A women's hospital or maternity for.
Houses for the hospital servants.
„ 5.—Houses for the two Native Dressers.
„ 6.—Adjoining or inside cook-room; a small room 6 × 10 × 8 with door and padlock, to lock up the cooking utensils at night.
„ 7.—A new guard-room to the north.
„ 8.—Shed for four sick Carts and four dhoolies.
„ 9.—Apothecaries' quarters. Enlargement under reference.
„ 10.—1st European Infantry Medical Officers' quarters.

Maternity or Women's Hospital now in the most northerly block of the South Trimulgherry Barracks.

„ 11.—A small temporary cook-room. } For the nurse.
„ 12.—And latrine. }
„ 13.—A small temporary latrine for the women and children.

For the Cantonment Civil Population.

„ 14.—Near the centre, a dead house, pent-roofed, eaves and ridge ventilation, door and windows: 10 × 10 × 12, with one door and screen, and three windows.

Hospitals of 4th, 29th and 38th Regiments M. N. I.; of Cantonment; and of 2nd Regiment M. Lt. Cavalry.

„ 15.—One building each, 9 × 9 × 12;
„ 16.—Door;
„ 17.—Three windows;
„ 18.—Pent-roofed with eaves and ridge ventilation; suited for a dead-room for each hospital.

Hussar's Hospital.

„ 19.—A small native hospital for the native public followers, as per Governor-General's orders.

Married Quarters, Hussars, 1st European Infantry, 2nd European Infantry, and Artillery.

No. 20.—Erection of punkahs.

The whole of the surrounding country is treeless. There are patches of trees—tamarind, palmyra, date and custard-apple, near villages—but the country is bare. The Assistant Quarter-Master General is busy planting along the road-sides, and a year or two will do wonders to shade the walks with trees, but the want of trees generally leaves the appearance, during the hot weather, of great aridity. Of fruits, which Europeans esteem, the plantain is obtainable, and custard-apple is in such abundance that, in their season, 100 can be had for a shilling, but all the finer fruits are dear. There are but few wild game.

Lock Hospital.—As a matter intimately connected with the health of the troops, it may be mentioned that there is a Lock-Hospital at the station. It is situated in a building in the bazaar adjoining the barracks of the European Cavalry, which was formerly occupied as the Cantonment Hospital. It is capable of holding fifty immates, and the marginal note will show its past operations. It would be useful to show the venereal admissions from amongst the troops, but as in this class of ailments are included several of an old or secondary character, the advantages of contrasting these with the Lock admissions are not apparent. * * * In the sixteen years from 1842 to 1858, out of an average strength of 1283 European Troops, 6711 were admitted from venereal affections, amongst whom nine deaths occurred.

Year.	Admitted.	Died.	Average daily Sick.
1860	483	...	20¾
1	464	1	36¾
2	596	...	42¼
3	603	...	46¾
4	384	4	34¼
5	426	2	32

The transition state of the barrack accommodation has left this institution quite in the south-east corner of the Cantonment. On my arrival, part of the common women, about sixty of them, were residing in the bazaar at North Trimulgherry, and those residing in the Cantonment, about seventy in number, were scattered amongst the general community.

Those in the Trimulgherry bazaar have now been restricted to one street; their houses have all been numbered, and the register indicates the women both by name and number. The Cantonment women have now been brought into the old Lal bazaar adjoining the barracks of the European Cavalry. Previous to this segregation, some women resided in places where arrack was sold, and their present separation from the general community inhabitants, will distinguish the objects of visit.

The admissions in 1865 from this class of ailments have been as follows :—

H. M.'s King's Dragoon Guards......	37
„ 18th Royal Irish...............	114
B/D Brigade Royal Horse Artillery.	21
B/23d „ Royal Artillery.........	42
B/14th „ „	21
D/23d „ „	32
No. 5/20th Brigade „	12
H. M.'s 105th Regiment..............	133

To ensure due control over the women, who ply their avocation clandestinely, some of whom resorted to the rocks adjoining the barracks, the police, at my request, have prevented their loitering about at dusk. The Artillery have had fewer cases of this disease than the Infantry. The higher morale of the Artillery body, and their greater self-control may have partly effected this, but in the B/D Brigade and the B/23d Brigade, whenever a gunner fell sick, the woman was pointed out and sent to hospital. The mounted corps also (but of this there are doubts) may visit a better class.

An examination room has been fitted up in North Trimulgherry, to which those residing there come weekly; and the sick amongst them are sent to the hospital. Those in the Cantonment bazaar attend the hospital itself weekly. With the Troops all moving several miles to the north, the early removal of the Lock-Hospital to the same neighbourhood seems inevitable, though it would as yet be perhaps premature.

Rations.—There has not been any alteration in the rations during the year, the order of Government, 878 of 1853, being still in force. Of the diet articles, the mutton and beef were generally good, the sugar of inferior quality, the bread ill-baked, and the vegetables deficient in variety. All these are supplied by contractors, but the bread contract seems the most difficult to control owing to the annual changes. There is no public bakery, and as each contractor has to make his own arrangements, the difficulty of obtaining a suitable house and the expense of its adaptation are considerable.

Bakery.—The contract system is undoubtedly the best and safest, for all occasions, but a bakery building of a suitable size and form should be erected by Government, or by private enterprise, and the contractor for the time compelled to occupy it. Neither the 1865-6 nor the 1866-7 contractors, in the buildings they occupy have had sufficient space for their grain-grinders, and a considerable portion of it has been ground by sub-contractors in the bazaar, where there can be no supervision. The 1865-6 bakery was not cleanly kept. In 1864, writing from Bellary, I recommended that Government should erect a bakery and couple its rental with the contract. The Commissary General replied that it was intended to erect bakeries with machinery : but, even if this be done, the building which I advocated could be built in anticipation, and so constructed as to admit of the subsequent introduction of all needed machines.

* * *

Vegetables.—The ailments of this station which prove fatal to Europeans are dysentery and liver disease, and a plentiful supply of good fresh vegetables is therefore of much importance to their health. It would be easy for contractors or Government to keep on hand a supply of preserved vegetables to meet any temporary deficiency, but the value of freshness in this class of dietary articles would out-weigh all considerations as to quantity, and it is to their cultivation that attention should be directed.

[Here follows a list of nearly fifty vegetables which might easily be grown at Secunderabad].

Assistant Surgeon Simon, M.D., writing on this point, mentions that " vegetables are scarce at certain times in the year. So much so that there is often difficulty in procuring them, and even when obtained, they are frequently so stringy and fibrous, that the men do not care to eat them. The more common vegetables, however, such as onions, pumpkins, carrots, radishes, and a kind of spinach, can generally be found."

The vegetable issues have consisted of carrots, radishes, pumpkins, ochro, and egg plant. In 1865, for a short time the supply of potatoes failed to be received from Poonah and Bangalore, and ½ a ℔ of bread was issued in lieu of them.

(In Ireland when potatoes are in use the usual allowance is 3¼ lb per head thrice a day.)*

Assistant Surgeon Ramsbotham, M.D., Royal Artillery, however, though he "thinks the supply of vegetables has been sufficient," adds that "the men frequently supplement them with fruits in season." He says "carrots, onions, turnips, radishes, lettuce, cabbage, brussels-sprouts, beans, peas, banday-koy, bringhall, nolecole, capsicum, sweet-potatoes, cucumber, and pumpkins, will all grow well. I think that in such a climate as obtains in Secunderabad, where most European vegetables will grow well with ordinary care and plentiful water supply, a regular methodized system of vegetable cultivation should be introduced, and vegetables be specially cultivated for the supply of the troops; from what I have seen of private kitchen gardens in the station, an excellent supply of good vegetables might be obtained for all the troops throughout the year; even potatoes, I think, might be successfully cultivated; at all events, the Provost Sergeant has proved that this may be done in the ground around the Trimulgherry Military Prison. If instead of permitting so much rice cultivation within the cantonment proper, such fields were cultivated with vegetables, both the amount of malaria would be diminished, and an excellent supply of vegetables obtained.† Fruit is rather scarce, the principal, grapes, custard-apple, mango, plantains and melons."

General health.—Many of the soldiers whom I have seen when inspecting here and in other stations, in the past four years, have appeared to me to be considerably under-fed: to be, if a common expression were written, under par. I have seen them when inspecting at some of the principal stations, Rangoon, Thayet-myoo in Burmah, Penang and Singapore in the Straits, Bangalore in Mysore, Bellary in the Ceded

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* Eaten with buttermilk and salt *only*.—ED. *M. Q. J.*

† We should have thought that this matter was almost entirely in the hands of Commanding Officers, and would be met by the immediate establishment of Soldiers' gardens. That Soldiers' gardens may be made a success, not only furnishing the men with good, fresh, wholesome vegetables, but allowing of the cultivators gaining the further advantage of selling a portion of their produce, has been proved even in so unpromising a situation as the berms of Fort St. George. We have been present at a kind of fête in these really pretty gardens when a large sum of money was distributed in prizes to those men of the 76th Foot, who had been most assiduous and successful in their gardens. The matter may also be viewed in another light, viz., as affording a healthful employment to the ennuyé soldier.—ED. *M. Q. J.*

Districts, and here, and I have no doubt that the bulk of them were more or less short of robust health. The causes have seemed to be various. That recruits have a lower physique than formerly might be at once assumed from the fact that latterly recruiting for the army has been becoming more difficult. The last party whom I saw arrive was for H. M.'s 108th Regiment, and on the 18th December appeared youthful, slender and anæmic. Assistant Surgeon Clery, the medical officer of this corps, when alluding in his 1865 Annual Report, to the causes of sickness in this corps, says that he "cannot attribute the mortality to any certain cause, and must therefore put it down to many, such as climate, intemperance, the general want of stamina and physique in the present recruits enlisted for the army; this latter cause was very palpable, in the last draft just arrived, consisting of mostly young, pale, worn-out looking lads, stunted, and in many instances bearing the features of mature age. It is my idea that all those recruits should be sent to Wellington until their drill is finished, and then sent to the plains in accordance with their health; a great number of the dysentery cases occurred amongst the draft that arrived in the end of 1864."

And, in connexion with this subject, it has seemed to me that not only have diseases of certain classes been more frequent, but that much of the asthenic character of ailments, so marked during the past few years, has its origin in the lower condition of the persons attacked. Assistant Surgeon Simon, M.D., B-23d Brigade Royal Artillery, has several times drawn my attention to the fact that the men who have been attacked with hepatic inflammations, have, for months before, been falling off in person.

* * *

[Here follow some remarks upon the ration of the Soldier, and upon the propriety of changing the hours at which the meals are served, with a recommendation that Government should allow a cup of hot tea or coffee and some bread stuff to each Soldier before morning parade, a necessary refreshment for which very few soldiers can afford to pay. The dietary for the sick in hospital next comes under review. The Geology of the Station is then noticed, and this is followed by an account of seventeen native villages dispersed in and around the Cantonment. This account is carefully drawn up evidently from repeated personal inspection of the places alluded to. We here resume our extracts.]

Two of the Medical officers in their Annual Reports notice these villages and their cultivated ground.

Their remarks are doubtless merely repetitions of what has already appeared in printed papers, but it is proper to place their names here. Assistant Surgeon Ramsbotham says that " Amongst the most important causes of disease, * * * may, I think, be enumerated the dryness and high temperature, the numerous foci of malaria existing in and around the Cantonment, and the saturation of the soil with organic impurities in and round the spots occupied by the native population, with the resulting impurity of the atmosphere. The last cause, I am inclined to think, a very important one as regards the causation of Dysentery, and more connected with the production of the disease as an endemic one, than malaria itself.

"My limited experience of this Station, leads me entirely to concur with Dr. Crawford on the necessity of a General Sanitary Supervision of the whole Cantonment, and to regard the 'neutral strips' occupied by the natives as the common receptacles of the excreta of the community and fruitful sources of miasmata.

"There is no doubt that both in and around the Cantonment of Secunderabad, the main conditions of development of malaria exists; it is not simply that low swampy tanks and extensive rice-fields (which are ordinarily recognized sources of malaria) abound, but a high temperature acting on a surface previously moistened and even independent of any decaying vegetable matter, in the process of drying up, will, in all probability, generate malaria; the essential moisture is in the subsoil, for, as I have already frequently mentioned, subsoil drainage in the Cantonment does not exist, and is a question altogether of the future; the nature of the soil is one also which is supposed to favour the extrication of malaria, viz., a dry, loose, open disintegrated granite one, mixed here and there with disintegrated trap or hornblende, forming a black soil; hence it is porous, penetrable, retentive of moisture, and in all probability also contains both animal and vegetable matters undergoing decay. In Secunderabad itself, I conceive malaria is generated both by the tanks so frequently referred to, the rice-fields, and the subsoil generally; while in Trimulgherry the latter source seems to be the principal agency at work, as the tanks are fewer, smaller, more distant, and the rice cultivation very limited in amount. This difference may, I think, be fairly considered the reason why malarial fevers have been so much less frequent in the one station than in the other. The ratio per 1000 at Secunderabad in the three Batteries is 176·8, 306, and 194·6, while in Trimulgherry it has only been 84·5 and 46. I may here mention an interesting fact connected with the Statistics of the B-D and B-23rd Batteries, that the belt of trees referred to as separating the lines of the B-D from the swampy tank, and which, by Dr. Ranking and others, was considered one of the principal reasons of the different rate of sickness in the two Batteries, does not seem, in 1865, to have caused that immunity from fevers which it was formerly supposed to do; thus, while the men occupying the protected barracks give a ratio of 306 admissions per 1000 for malarial fevers, those in the unprotected ones give only 176·8, but if a comparison is made between the two batteries as regards the prevalence of diarrhœa and dysentery, the reverse obtains, and while the B-D shows a ratio of 476 per 1000, the B-23rd shows 646. This fact, coupled with that mentioned above, seems, I think, to show that malaria alone is only one, and perhaps even not the most important one, of the causes of zymotic disease at this station; and I therefore allude, secondly, to what, I think, another and very important cause, viz., the saturation of the soil with organic impurities, and the non-sanitary condition of the bazaars and native locations in the very midst of the troops. Their general condition may still be described in the words of the report of the Commissioners in India; that 'there are no regulations as to the general arrangement of the houses, the width and direction of streets, drainage or water supply; the habits of the natives such that they cover the whole neighbouring surface with filth, and, if there be any ravines or pits in the neighbourhood, convert them into dangerous nuisances; there are generally no public necessaries, there are often cess-pits among the houses, and the surface drainage sometimes flows into tanks from which the water-supply is derived.' The tank, previously referred to, is commonly resorted to by the natives for purposes of nature, they wash themselves and their clothes in it, their cattle and horses, besides which cattle graze around the low shelving margin; hence, it cannot be doubted that with the drying up of the ground after the rains, organic impurities must thoroughly saturate the soil and contaminate the atmosphere with enteric emanations. There can be no question that impure air from putrefying animal substances, like the gases and vapours from sewers, or the air from very foul latrines, is a fertile source of dysentery and diarrhœa. I am strongly inclined to believe that dysenteric stools contain a communicable poison, and the prevalence of dysentery, at this station, as an endemic disease, I am disposed to believe, is owing in great measure, to organic emanations from a soil saturated with enteric and other organic impurities.

"The above two causes of zymotic disease are aided, thirdly, by the high temperature and dryness of the air. This increases some of the organic functions, while it tends to depress the animal ones; it probably increases the hepatic functions and modifies and alters in its sensible qualities the bile secretion, and so tends to disorder the stomach and intestines; it appears to cause less necessity for animal heat, hence less demand for food, diminished metamorphosis of tissues, and decreased excretion; errors of eating and drinking in the way of excess, (and both are not uncommon in India) tend to produce derangement of the abdominal viscera; defective elimination of hydro-carbons by the lungs, under diminished heat generation, throws more work upon the liver.

* * * *

"General sanitary measures cannot be carried out in the station as long as the Nizam holds control over the patches of ground in and close to the station. Surface-drainage should be allowed to flow away as quickly as possible, and water courses made through all the low ground, instead of which it is now collected in shallow ponds for irrigating purposes, and at times gives off most offensive odours."

Meteorology.—The meteorological phenomena of the cantonment, as illustrable by the wind and rains may be here noticed.

The rain-fall at Secunderabad varies considerably, as the following table will show:—

	Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
	1856	...	...	0·44	1·61	1·84	5·34	4·41	7·93	2·51	6·91	4·38	0·07	35·24
	1857	...	...	...	0·97	6·16	2·94	4·37	0·98	3·76	2·50	1·55	...	23·23
	1858	...	...	...	...	0·73	4·63	3·82	2·61	7·89	1·64	...	...	21·32
	1859	...	...	...	1·20	0·67	0·07	1·83	5·70	1·69	1·76	0·01	...	12·93
	1860	...	...	0·03	...	0·02	2·59	4·48	3·13	5·70	2·02	...	...	17·97
	1861	1·00	...	1·15	...	0·10	200	5·75	7·41	1·85	0·54	...	...	19·80
	1862	1·68	0·40	0·14	0·29	...	3·55	3·55	2·33	3·75	9·64	7·08	0·19	32·60
	1863	0·30	...	...	1·20	0·93	2·53	5·27	8·22	6·05	2·07	...	...	26·57
	1864	...	...	...	0·15	1·77	7·96	7·01	4·02	5·15	...	2·71	...	28·77
	1865	...	1·39	0·02	2·07	2·36	2·79	4·58	7·82	5·84	0·73	0·60	...	28·20
For the 10 years.	Total...	2·98	1·79	1·58	7·49	14·58	34·40	45·07	50·15	44·19	27·81	16·33	0·26	246·63
	Average.	·298	·179	·158	·749	1·458	3·440	4·507	5·015	4·419	2·781	1·633	·026	24·663

Varying from 12·93 in 1859, to 35·24 in 1856. During the ten years from 1856 to 1865, the average fall of rain has only been 24·663 inches. In all the four months of December, January, February and March, only 0·63 inches fall, but in June, July, August, September and October 17·37 inches fall on the average.

The prevailing winds of the place are easterly and westerly, veering to the north or south, and it is when those from the west, and south-west and north-west, are blowing, that the principal rains fall and the more severe diseases occur.

In the past three years there are recorded at Secunderabad, forty-six variations of the wind.

* * * *

In twenty-five instances they have been easterly, veering to the north-east or to the south-east, to an equal extent; then easterly winds blowing in the months of January, February, March, April, October, November, and December. Nineteen entries are of westerly winds veering to the north-west or south-west, in the months of February, April, May, June, July, August, and September, and it is while the rains are falling, in the months in which westerly winds prevail, but also in the month of October, that the severer forms of sickness occur.

25 Easterly.
- 9 East winds, viz., 1 January, 2 March, 2 April, 3 October, 1 December.
- 8 South-east, 1 January, 3 February, 1 March, 1 April, 2 December.
- 8 North-east, 2 January, 1 February, 2 October, 3 November.

2 North winds, viz., 1 January and 1 September.

19 Westerly.
- 13 West winds, viz., 1 May, 3 June, 3 July, 3 August, 3 September.
- 2 North-west, viz., 1 February, and 1 September.
- 4 South-west, viz., 1 April, 1 May, 1 June, 1 August.

The following memoranda will show, for **1865** *the number of times the wind blew from various points of the compass:—*

Points of Compass.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.
N.	...	...	1	...	1	...	3	6	1	2	...	...	...	...	...	...	17	18	16	12	...	...	...	1
N. N. E.	...	...	...	3	1	...	1	1	2	7	3	..	..	...	...	...	...	...	4	15	27	27	3	19
N. E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
E. N. E.	..	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	..
E.	14	20	3	5	13	19	5	15	...	...	1	3	..	...	...	...	...	...	...	2	...	...	...	7
E. S. E.	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
S. E.	13	5	14	12	10	10	6	1	. .	2	..	..	..	...	...	...	...	...	...	2	...	1	...	2
S. S. E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
S.	5	4	4	2	5	1	5	3	...	...	...	...	...	...	...	1	...	1	1	..	1	1	21	2
S. S. W.	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
S. W.	1	...	3	2	1	...	15	...	8	4	1	..	1	...	...	...	...	...	...	..	1	...	5	...
W. S. W.	...	...	...	...	...	...	...	...	...	..	23	..	..	...	...	...	...	...	..	..	...	...	...	...
W.	...	...	...	1	..	...	4	...	16	13	...	25	28	29	31	30	11	8	...	..	...	...	2	...
W N. W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
N. W.	...	...	...	3	..	1	2	4	4	3	2	2	2	2	...	...	2	3	...	..	1	1	...	...
N. N. W.	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...

It will be seen from this that the winds have been easterly and westerly, veering to the north and south. There have in all, in 1865, been 762 recorded changes in the wind; of these 312 winds blew from the east with a southerly or northerly tendency, and 285 blew from the west, veering to the south or north.

Sickness and Mortality.—It is very unsafe even in temperate climates to generalize from the data of a limited period. But if not advisable where the elements of disease are few, it is still less so in the tropics where they abound, and where there occur cycles of unhealthiness and cycles of salubrity, without the causes in either case being traceable. The following observations on the 1865-6 sickness may, however, be deemed of interest.

In reviewing the 1865-6 condition of the troops, it may be noticed, that the average strength of the European and

Native soldiery has been almost at the same height, of about 2500. The admissions of the Europeans have been 3678, and as 163 remained sick on the 1st of May 1865, the total treated in the past year were 3841. Each European soldier, therefore, has been about 1½ times in hospital in the course of the year. Of these admissions, the fewest occurred in January and February 1866, May 1865, and April and March 1866, and the most numerous admissions in June, December, November, July, August, October, and September of 1865.

Fewest admissions.		Largest admissions.	
1866 Jany. 221	1866 April 242	1865 June 302	1865 Aug. 379
Feby. 221	March 282	Decr. 308	Oct. 397
1865 May 240		Novr. 316	Sept. 414
		July 356	

The ranging of sickness would seem to follow the aridity or humidity of the seasons. During the dry weather, whether hot or cold, the admissions are few. But with the rainy season the admissions increase, and in September, when the rain fall has been most continuous, and the ground has become most saturated with moisture, the admissions are greatest.

[Here follow some extended remarks upon the water-supply and general conservancy of the station.]

The average strength of the European soldiers at Secunderabad in 1865 was 2732·22. The average daily sick was 182·15; and the strength was nearly twice in hospital, for 4427 were admitted, of whom 59 died,—other 4 deaths have occurred out of hospital. The rate of admissions to strength, viz., 1616 per 1000, seems high, but the recent change commanding men not to be detained more than twelve hours without admitting them, prevents comparison with older times. The death rate, including in and out of hospital, was 23 per 1000 of the strength.

The rates for the past twenty-two years have been as under:—

EUROPEAN ARTILLERY.						EUROPEAN INFANTRY.					
Years.	Average strength.	Average sick to strength	Total admissions each year.	Total deaths each year.	Percentage of deaths to strength.	Average strength.	Average sick to strength.	Total admissions each year.	Total deaths each year.	Percentage of deaths to strength.	Years.
1837	$120\frac{3}{12}$	$9\frac{1}{3}$	258	5	$4\frac{1}{8}$	851	$9\frac{1}{3}$	1463	125	$14\frac{11}{16}$	1837
1838	$96\frac{10}{13}$	8	204	5	$5\frac{1}{4}$	$728\frac{1}{2}$	$9\frac{1}{3}$	1316	52	$7\frac{1}{8}$	1838
1839	$96\frac{6}{12}$	$9\frac{3}{4}$	162	6	$5\frac{3}{4}$	$603\frac{1}{4}$	$9\frac{1}{4}$	1172	37	$5\frac{7}{8}$	1839
1840	$104\frac{8}{12}$	$6\frac{1}{4}$	169	0	0	$604\frac{5}{12}$	9	1256	32	$5\frac{1}{4}$	1840
1841	$115\frac{9}{12}$	4	153	4	$3\frac{1}{2}$	$855\frac{9}{12}$	$7\frac{3}{4}$	1859	33	$3\frac{7}{8}$	1841
1842	$104\frac{4}{12}$	$3\frac{13}{16}$	116	2	$1\frac{7}{8}$	$945\frac{1}{2}$	$7\frac{1}{4}$	1773	49	$5\frac{1}{8}$	1842
1843	101	2	77	0	0	824	$9\frac{2}{3}$	1608	90	$9\frac{1}{6}$	1843
1844	93	$4\frac{1}{3}$	108	6	$6\frac{1}{2}$	904	$7\frac{3}{4}$	1526	58	$6\frac{1}{2}$	1844
1845	80	$3\frac{1}{8}$	75	0	0	1004	$5\frac{1}{2}$	1445	30	$2\frac{9}{10}$	1845
1846	159	$7\frac{1}{8}$	128	6	$3\frac{3}{4}$	924	$8\frac{2}{3}$	1790	62	$6\frac{2}{3}$	1846
1847	149	$7\frac{1}{2}$	212	6	$4\frac{1}{9}$	1052	$7\frac{1}{2}$	1749	37	$3\frac{3}{5}$	1847
1848	158	$6\frac{3}{5}$	253	2	$3\frac{1}{4}$	1099	$6\frac{9}{11}$	1633	29	$2\frac{4}{5}$	1848
1849	179	$6\frac{1}{8}$	264	4	$2\frac{1}{4}$	431	$5\frac{1}{8}$	85	0	0	1849
1850	170	$5\frac{1}{3}$	252	8	$4\frac{4}{5}$	980	6	1663	22	$2\frac{1}{4}$	1850
1851	176	4	188	1	$\frac{1}{2}$	988	$7\frac{2}{3}$	1958	62	$6\frac{1}{4}$	1851
1852	186	$5\frac{1}{2}$	248	5	$2\frac{2}{3}$	964	7	1781	5	$\frac{1}{8}$	1852
1853	150	$5\frac{1}{3}$	206	0	0	905	$7\frac{1}{6}$	1580	12	$1\frac{1}{3}$	1853
1854	84	6	128	2	$2\frac{1}{3}$	637	7	1659	36	$5\frac{2}{3}$	1854
1855	$115\frac{3}{4}$	$6\frac{1}{11}$	196	4	$3\frac{1}{2}$	852	$10\frac{1}{4}$	1961	18	$2\frac{1}{9}$	1855
1856	175	8	311	5	$2\frac{6}{7}$	812	$5\frac{3}{4}$	1302	10	$1\frac{1}{8}$	1856
1857	134	$6\frac{3}{4}$	243	2	$1\frac{1}{2}$	1067	$3\frac{1}{2}$	1753	20	$1\frac{8}{10}$	1857
1858	95	$6\frac{1}{3}$	140	3	$3\frac{1}{6}$	1186	$9\frac{2}{3}$	1161	110	$10\frac{1}{8}$	1858
Average.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	42	5	Average.

The data from 1837 to 1858 in the above table were furnished by Inspector General Macpherson, to exhibit in contrast the sanitary condition of the European Troops occupying the Artillery and Infantry Barracks for a period of 22 years; and he remarks that, it will be observed that the Artillery lost, on an average, $2\frac{6}{11}$ per cent., and the Infantry 5 per cent.; and while the Artillery had $5\frac{7}{11}$ per cent. constantly sick, the Infantry had $7\frac{3}{11}$.

In a period of sixteen years, from 1842 to 1858, in an aggregate strength of 20,529 European troops who served with the Hyderabad Subsidiary Force, the following were the admissions and deaths, from—

Cholera.		Fevers.		Hepatic affections.		Diarrhœa.		Dysentery.		Rheumatic affections.		Venereal affections.		Thoracic affections.	
A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
125	50	7585	56	1707	91	2048	32	4210	297	1768	16	6711	9	1193	41

The 59 deaths in hospital in 1865 occurred in 1,906 admissions from twenty diseases; but 49, or the bulk of these fatal cases, died of six classes of ailments; twenty of the casualties being from hepatitis, nine from dysentery, and eight from fever. Of six cholera admissions five, and of four asthma cases two, died. Very many of the fatal dysenteric cases have been found associated with hepatic abscess.

Diseases.	Admitted	Died.	Ratio of Deaths to Admissions.
Dysenteria Acuta.........	532	6	1 in 88·6
,, Chronica......	109	3	1 ,, 36·3
Cholera Spasmodica.......	6	5	1 ,, 1·2
Febris Typhoides.........	8	3	1 ,, 2·6
,, Intermittens.......	427	4	1 ,, 101·7
,, Remittens..........	28	1	1 ,, 28
Asthma.....................	4	2	1 ,, 2
Phthisis Pulmonalis.......	15	5	1 ,, 3
Hepatitis Acuta...........	234	14	1 ,, 16·7
,, Chronica........	86	6	1 ,, 14·3

The immunity from fatal cases enjoyed by the B. Battery D. Brigade Royal Horse Artillery at Russulpoor, was marked. Out of a strength of 138·4 they had 258 admissions, but only one death, and that occurred out of hospital from insolation.

The B. Battery 23rd Brigade Royal Artillery were located quite near to them; out of an average strength of 165·08 they had 350 admissions, and six deaths from dysentery, fever, and liver disease. The peculiarity in this Battery's sanitary condition has been the frequency with which certain men with grave ailments were admitted in 1865.

Diseases.	Admitted	Died
Febris Intermittens....	32	1
,, Remittens.......	1	1
Dysenteria Acuta	62	1
,, Chronica...	20	1
Hepatitis Acuta.........	28	1
,, Chronica.....	29	1

No. 5-20 Brigade Royal Artillery, though treated in the same hospital with the sick of the B. Battery D. Brigade Royal Horse Artillery, and B Battery 23rd Brigade Royal Artillery, are located in intrenched barracks 1¾ miles to the North-East on a granite ridge. Their strength was 86·33, their admissions 115, and two died, one from dysentery and one from paralysis.

The B. 14th Brigade Royal Artillery, and D. 23rd Brigade Royal Artillery are located in North Trimulgherry. The B. 14th Brigade Royal Artillery, out of an average strength of 142·14, had 166 admissions, out of whom four died and one casualty was a suicide.

Diseases.	Admitted	Died
Dysenteria Acuta.....	29	2
Asthma..................	1	1
Hepatitis Acuta.........	23	1
Suicide....................	....	1

The D. 23rd Brigade Royal Artillery neighbouring the B. 14th Brigade were 169·41 strong. Their admissions 215, and deaths 7. This varied health of the Artillery Batteries is remarkable.

Diseases.	Admitted	Died
Diarrhœa..................	10	1
Phthisis Pulmonalis...	1	1
Hepatitis Acuta.........	12	3
,, Chronica....	12	2

Diseases which have proved fatal among the Artillery.

Battery.	Brigade.	Strength.	Admitted.	Died.	Number of daily sick.	Ratio per 1000 of strength.		Dysenteria Acuta.		Dysenteria Chronica		Diarrhœa.		Paralysis.		Hepatitis Acuta.		Hepatitis Chronica.		Asthma.		Suicide.		Insolatio.		Febris Intermittens.		Febris Remittens.		Phthisis Pulmonalis.	
						A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
B.	D.	138·40	258	1	8·27	1864	7·2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
B.	23rd	165·08	350	6	16·25	2180	36·3	62	1	20	1	...	...	...	...	28	1	29	1	...	...	...	...	...	...	32	1	1	1	...	...
No.5	20th	86·33	115	2	3·73	1332	23·1	16	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
B.	14th	143·14	166	5	7·93	1167	35·1	29	2	...	...	...	...	...	...	23	1	...	...	1	1	...	1	...	...	...	...	...	...	...	...
D.	23rd	169·41	215	7	10·15	1268	41·3	20	...	...	...	10	1	...	...	12	3	12	2	...	...	...	...	...	...	...	...	...	...	1	1

I think that these death-rates in the B-14th Brigade, B-23rd-Brigade and D 23rd-Brigade, Royal Artillery are high.

Assistant Surgeon Ramsbotham, M.D., Royal Artillery, gives the following summary:—

Summary of Admissions and Deaths in the Batteries of Royal Artillery stationed at Secunderabad and Trimulgherry, from 1st *January to* 31*st December* 1865.

Station.	Secunderabad.						Trimulgherry.				Total.	
Battery.	B-D R.H.A.		B-23rd R.A.		5-20th R.A.		B-14th R.A.		D-23rd R.A.			
Average Strength......	138·40		165·08		86·33		142·14		169·41			
Average Daily Sick.....	8·27		16·25		3·73		7·93		16·15			
Diseases.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	Admitted.	Died.
CLASS I.—ORDER 1.												
Tonsillitis....................	2	...	4	...	1	...	1	...	...	...	8	...
Febris Intermittens....	42	...	32	1	15	...	12	...	8	...	109	1
„ Remittens.......	1	...	1	1	...	...	...	...	...	...	2	1
„ Continua.........	...	...	2	...	1	...	1	...	1	...	5	...
Ophthalmia..................	...	...	...	...	3	...	1	...	7	...	11	..
Furunculus................	2	...	2	...	...	...	1	...	...	...	5	...
Dysenteria Acuta.......	23	...	62	1	16	1	29	2	20	...	150	4
„ Chronica...	11	...	20	1	2	...	18	...	17	...	68	1
Diarrhœa.......................	37	...	31	...	12	...	3	...	10	1	93	1
Cholera biliosa...........	1	...	...	...	..	...	...	...	...	...	1	...
„ Spasmodica....	1	...	...	...	...	...	...	...	...	...	1	...
Rheumatismus Acutus.	4	...	9	...	1	...	1	...	4	...	19	...
„ Chronicus.	6	...	11	...	...	...	...	...	13	..	30	...

And this Officer further observes as follows:—"The Fevers have been, with seven exceptions, only of the intermittent type, and the quotidian variety of this by far the most common; as shown by the table in the margin, the B. Battery D. Brigade Royal Horse Artillery gives the highest ratio of admissions.

Miasmatic Diseases. Ratio per 1000.	
B-23rd..........	1000
B-D...............	920
5-20th............	657
B-14th...........	450
D-23rd..........	447

Fevers. Intermittent and Remittent. Ratio per 1000.	
B-D..................	306
B-23rd............	176.8
5-20th............	194·6
B-14th..........	84·5
D-23rd..........	4·6

Dysentery and Diarrhœa.	
Ratio per 1000.	
B-23rd	646
B-D	476
5-20th	394
B-14th	338
D-23rd	243

Dysentery and Diarrhœa have been very prevalent during the year, and I have already attempted to offer some explanation of the probable cause of such frequency in this station. The B/23rd Battery shows the highest ratio of admissions.

Mortality.—Ratio per 1000.			
Zymotic Diseases.		Hepatitis.	
B-23rd	24·80	B-23rd	12·15
5-20th	13·20	B-14th	7·00
B-14th	14	D-23rd	32·80
D-23rd	65		

Assistant Surgeon Simon, M.D., the medical officer B/14th and D/23rd Batteries Royal Artillery, has given the following contrasting statement of these two bodies :—

B-14th Brigade R. A.					D-23rd Brigade R. A.				
Average Strength.	142·14		Ratio per 1000		Average Strength.	169·41		Ratio per 1000	
Diseases.	Total treated.	Died.	Total treated.	Died.	Diseases.	Total treated.	Died.	Total treated.	Died.
Fevers	13	..	91·45	..	Fevers	9	..	53·25	..
Dysentery	55	2	387·32	14·08	Dysentery	43	..	254·43	..
Diarrhœa	3	..	21·12	..	Diarrhœa	10	1	59·17	5·91
Venereal	13	..	92·54	..	Venereal	36	..	213·01	..
Hepatitis	38	1	267·60	7·04	Hepatitis	25	5	147·92	29·56
Phthisis, P. T.	..	..	..	..	Phthisis, P.T	2	1	11·83	5·91
All other diseases	61	1	429·57	7.04	All other diseases	108	..	639·05	..
Total..	183	4	1288·69	28·16	Total..	233	7	1378·66	41·40

"These tables," he remarks, "show the relative amount of sickness in each Battery. The D/23rd Brigade R. A., it will be seen, shows the highest rate of mortality and the fewest number of admissions for diseases of the liver and bowels. The deaths in this battery were increased by a number of men who joined during the latter part of the year suffering from confirmed organic disease, and who, on arrival, were unable to stand the climate of this station. During the months of August and September twenty-three men joined from Bellary and other equally hot stations, on the breaking up of certain field batteries, and before the end of the year these fresh arrivals gave 20 admissions and 3 deaths; the latter from hepatic disease alone. About the same time a number of men joined the B/14th Brigade R. A. in a more or less debilitated condition, and many of them have done little or no duty since their arrival."

"On the whole," he observes, "the women have been healthy, but the mortality among the children has been very high, no less than eight having died in the D/23rd Brigade Royal Artillery alone, during the year, from Dysentery, Diarrhœa, and Cholera. One woman also died from the latter disease. The Soldier's child in this country is rendered so susceptible for the induction of disease through the bad management of its parents; the diet, too, is ill suited to its wants; and, if it should happen to suffer at all from disease, its parents are so slow in bringing it to the knowledge of the Medical Officer that much valuable time is lost in treating the case. In addition, the climate at this station appears inimical to young children if we may judge from former returns; at any rate, they seem to waste and die."

The 1st King's Dragoon Guards, on the south-east of the Cantonment, had an average strength of 452·71 and 23·25 of average daily sick. The admissions were 629, and deaths 10, viz., in hospital 8, out of hospital 2. The ratio per 1000 admitted was 1389, which is not dissimilar to the artillery rate; but reckoning the hospital casualties only, the death-rate was 17·6 per 1000, and in-

Diseases.	Admitted.	Died.
Febris Typhoides..........	1	1
„ Intermittens.......	78	1
Cholera spasmodica....	1	1
Phthisis Pulmonalis......	4	2
Ileus......................	1	1
Hepatitis Acuta..........	29	2
Total...	114	8
Out of Hospital...	...	2

cluding the two out of hospital, 22 per 1000. The ailments, causes of the deaths, were as per margin.

The medical officer, Surgeon-Major Jephson, M.D., makes a few observations on particular diseases. He mentions that "85 cases of Dysentery have been admitted; nearly all these were attacked when drinking the well-water in the barrack-square found by the Government Chemical Examiner to contain upwards of 6 grs. of organic matter to the gallon. About the last quarter of the year water brought from the Trimulgherry barrack-well, said to contain only 2 grs. of organic matter to the gallon, has been used, and since then very few fresh cases of Dysentery have occurred among the men of the Regiment. It is difficult preventing the men drinking the barrack well-water, as it is cooler and, the well being in barracks, the water is fresher than that brought a mile and a half in barrels in the sun. Some of the late cases of bowel complaint have admitted their imprudence in drinking this bad water, so that it is more than probable that most, if not all, of the men who suffer with Dysentery have been drinking the bad water up to the time they were attacked.

"Of Insolatio, four cases occurred during the year; one was a very slight case, and returned to duty in a few days. One was fatal. He was returning from musketry drill when he fell down insensible, and he was dead when he was brought to hospital. The other two cases were very bad ones and nearly proved fatal. The weather at the time was particularly hot, close and oppressive; not a breath of wind blowing; Barometer and Thermometer particularly high, the latter 96° in the wards of the hospital. Several other cases occurred about the same time in other corps in the station, and proved fatal.

"Of the women and children two out of eight cases of Dysentery admitted into hospital proved fatal, but more than twice this number were treated in their own quarters. One woman died of abscess of the liver."

The 18th Royal Irish and 108th Regiments were located nearly together; the former in North, the latter in South Trimulgherry; and their relative sickness and mortality may be compared together as under:—

Corps.	Strength.	Daily sick.	Total.		Ratio per 1000.	
			Admitted	Died.	Admitted	Died.
Her Majesty's 18th Royal Irish............	802·07	61·53	1316	15	1640	18·7
Do. 108th Regiment..............	742·08	49·04	937	17	1276	22·9

The diseases which proved fatal, their admissions and deaths, were as under:—

Corps.	Febris Typhoides.		Febris Intermittens.		Dysenteria Acuta.		Dysenteria Chronica.		Cholera Spasmodica.		Syphilis Secondaria.		Phthisis Pulmonalis.		Delirium Tremens.		Bronchitis Acuta.		Asthma.		Hepatitis Acuta.		Hepatitis Chronica.		Icterus.		Insolatio.		Asphyxia.		Vulnus Sclopitorum.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
H. M.'s 108th Regiment. ..	5	1	113	2	196	2	32	2	3	3	11	1	6	1	2	1	12	1	1	1	38	1	5	1	...	...	...	...	...	...	...	...
„ 18th Royal Irish.	2	1	...	...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	79	6	18	2	1	1	1	1	1	1	1	1

There is little difference between the two corps as regards the death rates; the sick admissions ratio 1640 and 1276 are very dissimilar. But while the 18th Royal Irish admissions were 1640, their casualties, from six ailments, were only 18·7 per 1000 of the strength; but with 1276 per 1000 sick in the 108th, 22·9 per 1000 died. Dracunculus was common.

"This extraordinary disease attacked the regiment in the month of August last in the most unaccountable manner, raising the ordinary percentage of sick from 5½ to 9, and causing no less than 115 men to pass through the Hospital from that time to the end of the year. Various reasons and theories have been advanced here as well as elsewhere* to explain the origin of this parasite, but," says the medical officer, "nothing yet has been satisfactorily discovered to prove its source to my mind. The most probable origin, no doubt, is in the bathing water, but I am not at all satisfied that it originated there, as many men who suffered from it positively stated that they never bathed; besides, amongst the women and children there was not a single case. It broke out last year in a similar way amongst the 18th Royal Irish Regiment who were located in the next barracks, and I had an idea that it was communicated from one Regiment to the other, as the sick of the 108th were removed into the part of the Hospital previously occupied by the 18th Royal Irish. But here again I am met by the fact that many men who had not been in hospital at all were attacked. It appears that up to five months before the disease showed itself, the men were in the habit of bathing in a small dirty tank about one mile from the barracks; the idea suggests itself at once that it originated here, but many of the men positively assert that they never bathed in this tank, and yet they had the worm. The men themselves state they got it from drinking the water at the main-guard; that it was there the 18th Royal Irish got it, and that when they took it over from them they got the guinea-worm also. But none of the Arsenal people who drink the water have it. Further, this main-guard being a long way from the barracks, I am inclined to think that this idea was started by the men in the hope

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*See some remarks on this subject on pages 452 to 461, vol. i. of this Journal.—Ed. *M. Q. J.*

that they would be relieved from this duty. I am afraid, indeed, that I cannot add much to what is known already about this parasite, but I am very much inclined to think with Dr. Green that it exists as much in the soil as in the water, and in no instance could I detect anything like the Filaria as I saw them under the microscope when taken from a patient. But it is my intention," he adds, "still to continue investigations, and should I discover anything calculated to throw any light on this interesting question, I will forward it in a special report. Indeed, what I have seen coincides in most particulars with the able remarks in Dr. Aitken's book on this subject; the appearances under the microscope were exactly as he depicted them in the many specimens examined by me. The worst feature about the disease is the length of time a man is laid up; on an average, 30 days, I computed that men were unfit to do duty. One man was 79 days in Hospital: the worm appeared in the fore-arm and was broken in extraction, setting up intense inflammation and suppuration, a large piece sloughing away. Another man had seven in all extracted. In another case the worm was felt over the pubes and passing down the inner side of the thigh; the whole tract sloughed in this instance. The lower extremities, with the exception of two in the arms, one in the scrotum, and three or four about the groins, suffered entirely; but it is a most remarkable fact that not one of the drafts that arrived in the end of 1864 were attacked, although many of them must have bathed in the aforesaid tank. This, I think, goes a great way to prove that the worm takes at least twelve months to develop and come to maturity. Last year the Surgeon of the 18th Royal Irish Regiment had the well from which the water was supplied to the plunge-bath of his Regiment closed, and water brought from another well. This he flattered himself would stop the disease, and the disease did cease. But I am glad to say that it has disappeared also from the 108th without having to close up any well. Believing that this changing the well had something to do with its disappearance, I intended to recommend the same, but having satisfied myself, through the microscope, that the germs did not exist in the mud or water of the well in use, I declined to alter it, and now I have no doubt that I was right. You must bear in mind that this regiment had no communication with the other except in the General Hospital; their water being supplied in barracks from a different source. Moreover, the 18th Royal Irish never bathed in the tank mentioned before.

* * *

" The first case from Dracunculus was admitted into Hospital on the 15th of August 1865, and the last, in the year, on the 31st of December 1865, being in all 115 cases that passed through the Hospital during the above period."

* * * *

NATIVES.—The Native Soldiery in 1865 had an average strength of 2809, of whom 76·84 were daily sick, and 73 died. The ratio per 1000 of strength treated was 595, and of deaths 22·4, a very high rate of mortality, but caused by an out-break of Cholera in the 4th Regiment M. N. I. while marching here from Madras.

Sappers and Miners.	
Strength...	214
Admissions from all Diseases...	175
Deaths	0
Average daily sick	7

The state of the Sappers and Miners is indicated by the marginal note. Their sick rate has been greater than that of any other of the bodies of Native Soldiery here. The Medical Officer attributes this to their having been in a feverish country, partly to exposure and partly to their habits. The position of their lines near the hamlet of Balam Rai, on the eastern slope of a sheet of wet cultivation, may also be a cause of this. Their water-source also is not good, and the water might advantageously be filtered.

Cantonment Hospital. Average Strength 176.		
Diseases.	Admitted.	Died
Paralysis	1	1
Abscesses	6	1
Contusio	12	1
	19	3
All other diseases ..	62	
Total...	81	3
Average daily sick...		4

The state of the Cantonment Hospital has been as per margin. The custom has been to treat the civil prisoners here, and while some of the Europeans have been treated here, others have been under the care of the Royal Artillery at Begumpettah, and others of them in the European Infantry Hospital at Trimulgherry, the cantonment receiving in return the native sick from the mounted and infantry corps. I have obtained the sanction of the Resident at Hyderabad to build a new hospital for the prisoners. Under the Principal Inspector General's orders the native sick of other corps are to be treated by their respective Medical Officers, and for the Europeans being treated here arrangements will be made. There has been a tendency to foul ulcers amongst them, the first part of which the Medical Officer considers to have been caused intentionally. Several gave this appearance, but I have been more inclined to attribute it to imperfect ventilation and insufficient space, and have recommended further enlargements of the jail.

The Medical Officer has remarked on the wretched neighbourhood and position in which the Ordnance are located. Their cholera cases were four, and those of the Commissariat one.

2nd Madras Light Cavalry.		
Average Strength 359.	Admitted.	Died.
Cholera Spasmodica...	4	3
Dracunculus..............	25	1
Hepatitis Acuta	1	1
Do. Chronica....	1	1
	31	6
All other Diseases......	144	0
Total..	175	6
Average daily sick 11.		

The occurrences in H. M.'s 2nd Regiment Madras Light Cavalry, are noted in the margin. Cholera continued to appear in the Cantonment in solitary cases from February to September, but the only cases treated in this corps were sent in from the Residency Escort. The two hepatic cases were of the Sergeant Major and Quarter Master Sergeant, and both had abscesses, and six days before the death of the latter the liver was punctured and sixty ounces of pus evacuated.

4th Regiment M. N. I.		
Average Strength 698.	Admitted.	Died.
Febris Intermittens....	194	3
Diarrhœa..................	29	2
Cholera Spasmodica...	104	44
Apoplexia..................	1	1
	328	50
All other Diseases......	159	0
Total..	487	50
Average daily sick 16.		

The state of the 4th Regiment M. N. I., has been as per margin. This Regiment suffered severely during 1865. With a strength of 698, the total admissions have been 487, and deaths 50. It marched from Madras on the 13th January and reached this station on the 15th March. The ailment broke out at Ongole on the 6th February, and disappeared only at Oopal on the 11th March; 44 died during the outbreak, 15 per cent. (of strength) were attacked, and 44 or nearly 6 per cent. (of strength) died. I give on the margin the strength of the year. It will be seen that one-seventh of the Hindus, one-seventh of the Mahomedans, and of eleven European Officers, three were attacked. But of those attacked, one out of every 2 Hindus died, one out of every 3·6 Mahomedans; but all the three attacks of the European Officers proved fatal. In the year 1865 there have been 335 Hindus, or somewhat over one-third [three-fourths ?] admitted; but of Mahomedans 148, or a little less [more ?] than one-half the strength, but in either case one out of every ten [treated in hospital] have died.

Race.	Strength.	Cholera.		All diseases.	
		Attacks.	Deaths.	Admitted.	Died.
Hindus....................	421 ?	61	30	335	33
Mahomedans.	280 ?	40	11	143	14
European Officers.	11 ?	3	3	0	0

This Regiment, after its arrival here, had in March and April, till the 20th May, from 13 to 28 sick in hospital, June and July few sick, but in September, October, November and December, the admissions and average daily sick greatly increased, ranging to, in all ranks, as per margin. The prevailing ailment in Secunderabad has been a mild form of quotidian intermittent, the paroxysms occurring within an hour or two of noon or midnight. This seems to have been the character of the ailments in Her Majesty's 19th Regiment M. N. I., which preceded the 4th M. N. I. in their Lines.

1865.	Men in Hospital.	
Months.	Maximum.	Minimum.
August - -	20	8
September	28	16
October - -	30	15
November	35	19
December -	51	35
January - -	29	21
February -	44	28
March - - -	49	28
April - - - -	61	37
May - - - -	67	41

32nd Regiment M. N. I.

Average strength 712.

	Admitted.	Died.
Febris Intermittens......	190	1
,, Remittens........	1	1
Erysipelas.................	1	1
Diarrhœa	12	1
Cholera Spasmodica.....	6	3
Syphilis Secondaria.....	3	1
Bronchitis Acuta.........	5	1
Out of Hospital...........	...	1
	218	10
Other Diseases............	169	...
Total...	387	10

Average daily sick 16·84.

The health state of the 32nd Regiment M. N. I. has been as per margin. During the months of August and September, intermittent fever of a mild form prevailed.

38th Regiment M. N. I.

Average strength 650.

	Admitted.	Died.
Cholera Spasmodica.....	3	3
Phthisis Pulmonalis.....	2	1
Bronchitis Chronica.....	3	1
	8	5
Other Diseases.........	361	...
Total...	369	5

Average daily sick 22.

The 38th Regiment M. N. I. have been singularly healthy during the year,* as the marginal note will show. There were seven changes in its medical attendants.

The three casualties from cholera occurred at the Residency.

The following is a general summary :—

*[Note.—With all due deference we must point out that the returns given do not quite bear out this statement. The average daily sick was 22, higher than that of any of the other Native Corps at Secunderabad. And the admissions to strength were higher than those of the other Corps with the exception of the Sappers and Miners, and the exceptionable 4th N. I. with 104 cases of cholera which occurred during its march and before its arrival at Secunderabad. The Returns show simply a less proportion of fatal cases in the 38th than occurred in the other Native Regiments.—Ed. *M. Q. J.*]

Native Troops.

	2d Light Cavalry.	4th Nat Infy.	32d Nat. Infy.	38th Nat. Infy.	Sappers and Miners.	Canton-ment Hospital.	Total.
Average Strength............	359	698	712	650	214	176	2809
Admitted........................	175	487	387	369	175	81	1674
Died..................................	6	50	9	5	...	3	73
Average daily sick............	11	16	16·84	22	7	4	...

Number of Admissions and Deaths of Diseases in which Casualties occurred.

DISEASES.	2nd L. E.		4th N. I.		32d N. I.		38th N. I		Sappers.		Canton-ment.		Total.	
	A.	D	A.	D	A.	D	A.	D	A.	D	A	D	A.	D
Cholera Spasmodica........	4	3	104	44	6	3	3	3	...	...	...	...	117	53
Diarrhœa..................	5	...	29	2	12	1	9	..	7	...	1	...	63	3
Febris Intermittens.........	11	...	194	3	190	1	218	..	78	...	36	...	727	4
,, Remittens..............	...	...	8	...	1	1	...	..	...	...	...	...	9	1
Erysipelas....................	...	...	...	...	1	1	...	..	...	...	...	...	1	1
Syphilis Secondaria	...	...	...	...	3	1	...	..	...	...	...	...	3	1
Dracunculus................	25	1	3	...	6	..	7	..	..	...	...	...	41	1
Phthisis Pulmonalis........	...	...	1	...	..	..	2	1	..	...	...	...	3	1
Paralysis.....................	...	...	...	...	1	..	1	..	..	...	1	1	3	1
Bronchitis Acuta.	2	...	13	...	5	1	2	..	5	...	...	...	27	1
,, Chronica.........	...	...	...	...	7	..	3	1	..	...	...	...	10	1
Hepatitis Acuta.............	1	1	2	...	..	..	1	..	...	...	...	...	4	1
,, Chronica..........	1	1	...	...	1	..	...	..	..	...	...	...	2	1
Abscessus	...	...	4	..	5	..	15	..	4	...	6	1	34	1
Contusio.....................	32	...	2	...	..	..	8	..	16	...	12	1	70	1
Apoplexia....................	...	...	1	1	..	..	...	..	...	...	...	..	1	1
Total..	81	6	361	50	238	9	269	5	110	...	56	3	1115	73
All other diseases....	94	...	126	...	149	..	100	...	65	...	25	...	559	...
Grand Total..	175	6	487	50	387	9	369	5	175	...	81	3	1674	73

European Troops.

		B-D Brigade R. A.	B-14th Brigade R. A.	Hd. Qrs. and B-23rd Brigade R. A.	D-23rd Brigade R. A.	5-20 Brigade R. A.	1st K. D. G.	18th R. I.	108th Regt.	Cantonment Hospital.	Total.
Average Strength....		138·4	142·14	165·08	169·41	86·33	452·71	802·07	742·08	34	2732·22
Admitted....		258	166	350	215	115	629	1316	937	41	4027
Died	Out of Hospl..	1	1	..	..	..	2	...	..	..	4
	In Hospital...	..	4	6	7	2	8	15	17	..	59
Average daily Sick...		8·27	7·93	16·25	10·15	3·73	23·25	61·53	49·04	2	...

Number of Admissions and Deaths of Diseases in which Casualties occurred.

DISEASES.	B-D.		B-14.		B-23.		D-23.		5-20		K.D.G.		18th R. I.		108th.		Cant.		Total.	
	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
Dysenteria Acuta	23	..	29	2	62	1	20	...	16	1	79	...	105	..	196	2	2	...	532	6
,, Chronica	11	..	18	...	20	1	17	...	2	...	6	...	3	..	32	2	...	...	109	3
Diarrhœa	37	..	3	...	31	...	10	1	12	...	52	.	73	..	32	...	4	...	254	1
Cholera Spasmodica	1	..	..	...	...	...	...	...	...	...	1	1	1	1	3	3	...	...	6	5
Febris Typhoides	..	..	..	...	...	..	..	...	..	.	1	1	2	1	5	1	...	...	8	3
,, Intermittens	42	..	12	.	32	1	8	...	15	...	78	1	108	..	113	2	19	...	427	4
,, Remittens	1	..	..	...	1	1	...	...	...	...	2	...	22	..	2	...	...	...	28	1
Syphilis Secondaria	1	..	3	...	12	...	5	...	...	...	8	...	18	..	11	1	...	...	58	1
Paralysis	..	..	..	...	...	...	...	...	1	1	2	..	2	..	2	...	...	...	7	1
Delirium Tremens	..	..	1	..	...	...	...	...	...	...	4	...	2	..	2	1	...	...	9	1
Asthma	..	..	1	1	...	...	...	...	...	...	..	...	2	..	1	1	...	...	4	2
Phthisis Pulmonalis	..	..	..	...	1	...	1	1	...	...	4	2	3	1	6	1	...	...	15	5
Bronchitis Acuta	4	..	2	...	2	...	1	...	6	...	22	...	62	..	12	1	...	...	111	1
Hepatitis Acuta	18	..	23	1	28	1	12	3	7	...	29	2	79	6	38	1	...	...	234	14
,, Chronica	6	..	12	..	29	1	12	2	1	..	3	...	18	2	5	1	...	...	86	6
Ileus	..	..	..	...	...	..	...	...	...	...	1	1	..	..	...	...	...	..	1	1
Icterus	..	..	2	...	...	...	2	...	...	...	2	...	1	1	2	..	...	...	9	1
Vulnus Sclopt	..	..	..	...	...	...	...	...	...	...	...	...	1	1	1	...	...	..	2	1
Insolatio	..	..	..	...	...	...	...	...	...	...	4	...	1	1	...	...	...	...	5	1
Asphyxia	..	..	..	...	...	...	...	...	...	...	...	...	1	1	...	...	...	..	1	1
Total	144	..	106	4	218	6	88	7	60	2	298	8	504	15	463	17	25	...	1906	59
All other diseases	114	..	66	...	132	...	127	...	55	...	331	...	812	..	474	...	16	...	2121	...
Grand Total	158	..	172	4	350	6	215	7	115	2	629	8	1316	15	937	17	41	...	4027	59

[This interesting report concludes with a description of the barrack accommodation available for the several corps.]

Art. XI.—*History of an Epidemic of Dysentery, which occurred at Bangalore, among the 16th Lancers, in June and July,* 1866. By C. A. Innes, Esq., M.D., Assistant Surgeon, 16th Lancers.

At the end of last May bowel disease prevailed to a considerable extent among the men of the 16th Lancers :—

	Admissions from		Deaths.
	Dysentery.	Diarrhœa.	
May 1866..........	1	5	...
June „	14	10	2
July „	10	9	1
Total...	25	24	3*

The Regiment was similarly attacked on its arrival at this station in September 1865, but that visitation might be accounted for by the circumstances in which the corps was placed. The men were new to the country; they were unprovided with proper protection for the head, or clothing suitable to the climate, and the temperature was unusually high for the season of the year. Those influences being no longer in operation, it is a matter of some interest to arrive, if possible, at the causes producing the second outbreak, which was more severe in its character and more fatal in its progress. The 2nd Battalion 10th Regiment did not suffer, though occupying Barracks built close to, and on the same incline, as those allotted to the Cavalry, the rations, water supply, and conservancy did not differ, the amount of drill was not excessive in either Regiment, and both were placed as much in the same condition as the horse and foot soldier could well be. The Barracks for both arms were built in 1809; those occupied by the Cavalry seem superior to the others, having a much nearer approach to modern views on Barrack construction and sanitation generally. No Regiment ever landed under more favorable auspices; they know they are quartered in the finest station in India, their physique is excellent. Strength 499, average age $25\frac{5}{12}$, service $6\frac{1}{12}$ years, and height 5 ft. 7 inches; they were judiciously selected as recruits, and carefully weeded before starting; they were 19 years on Home service, and had not been subjected to the hardships and decimation of the Crimean campaign.

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* A fourth fatal case occurred but does not appear in this column, as the death did not take place until the 3rd of August.

In the absence of any accountable cause for this sudden burst of disease, and having in view the immunity enjoyed by the corps quartered in the immediate neighbourhood, it is perhaps reasonable to conclude, that the nature of the trooper's duty exposes him to influences which are not called into action where the infantry soldier is concerned. Both appear on parade at the same hour, though the cavalry soldier has to get up much earlier, and both leave it together, but there the analogy ceases. The infantry man is necessarily the more heated of the two, but when he is dismissed, he returns to his barrack room, and his work is over for the day. The mounted man has now a fresh duty to perform; he strips to clean his horse, and while doing so is exposed to the sun; perspiring from this exercise, the man naturally seeks to cool himself as soon as he is at liberty, and most probably sits in a draught; a chill succeeds and mischief is likely to follow in the liver or bowels. A cup of coffee and a biscuit before starting for the parade, and covered stables when they return, would no doubt tend to protect from disease men who in England groom their horses under cover, and seldom mount them until they have eaten their breakfasts. Still, we cannot lay all the blame to this cause, as up to the end of May the Regiment was remarkably healthy, having even fewer admissions than in England.

Admissions from January to May 1866.

Months.	Total Admitted.
January	20
February	24
March	34
April	33
May	46

I shall now enumerate all the circumstances likely to have a bearing on the case, and leave the matter to my readers.

1st.—Early morning parades, without any thing on his stomach except, perhaps, arrack saved from the last night's allowance.

2nd.—The sudden and frequent chills from the nature of his duties.

3rd.—The great scarcity and the impurity of the water; (it contained on an average 5 grains of organic matter per gallon, even after passing through the filters, as well as a large quantity of Chlorine.)

4th.—The imperfection of the filters themselves.

5th.—The unwholesome quality, from its leanness, of the ration-meat, there being no grass owing to the lateness of the monsoon.

6th.—The sickness usual in Bangalore at the commencement of the monsoon.

7th.—The Barrack with its close proximity to the Bazaar.

My own impression is, that conjointly with all the circumstances just mentioned, and to most of which the 2nd Battalion 10th Regiment was alike subject, there is a local cause in the Barracks themselves. The King's Dragoon Guards suffered from Cholera in one particular block near the main guard, which became healthy after removing some houses placed at right angles to it and intercepting the free perflation of air. Now, we have a troop (D) which gives a larger amount of admissions than any of the others, as shown below.

Months.	A.	B.	C.	D.	E.	G.	H.	Total.
January...........	3	2	3	4	4	1	3	20
February.........	5	4	2	8	...	3	2	24
March...............	4	4	3	8	7	6	2	34
April...............	5	9	4	4	5	3	3	33
May.................	3	9	3	16	10	...	5	46
June...............	8	8	7	12	6	8	9	58
July...............	6	10	11	12	11	6	5	61
August............	6	3	7	5	9	4	4	38
September........	7	3	8	11	8	4	1	42
	47	52	48	80	60	35	34	356

I append extracts from the case book of the four fatal cases.

During the epidemic, on the suggestion of the Surgeon and with the approval of the Principal Medical Officer British Troops and Principal Medical Officer Mysore Division, the dysenteric cases were transferred from the Regimental Hospital to the new Cavalry Barracks on the Race Course; the change was most gratifying, the relapses, before so frequent, entirely ceased; the symptoms rapidly yielded to treatment; sleep, comfort, and spirits returned with quick convalescence. The treatment throughout consisted in the application of leeches over the course of the colon and around the anus; the gut too was occasionally washed out with milk and lime water; Ipecacuanha in full doses was exhibited in the form of infusion, and when the stomach was irritable the drug was thrown up the rectum.

CASE I.

Lance Corpl. R. C., aged 30. 11 years' service.

Disease.—Dysenteria Acuta.

Had been drinking before admission and exposing himself in the day time.

June 5th, 1866.—Admitted suffering from severe purging. Tongue furred.

8th.—Stools frequent, liquid and muddy-looking; cold clammy perspiration, and great prostration.

9th.—No improvement; exhaustion great; a choleraic countenance and great irritability of stomach.

11th.—Pulse 92; stools still frequent, muddy and fœtid; irritability of stomach and intense pain over the abdomen generally.

He gradually sank and died at 1 o'clock A.M. on the 13th.

Treatment.—Half drachm doses of Ipecacuanha, and enemas of the same if rejected by the stomach. Stimulants.

Post mortem 9½ hours after death.

Abdomen.—On opening the abdomen there was an escape of gas, and about 10 ounces of turbid serum and floating shreds of lymph were found in the cavity. Omentum loaded with fat, and vessels gorged, arborescent congestion of the small intestines. On tracing the colon the cæcum and ascending portion presented a deep red, and, in some parts, a sphacelated appearance with recent exudations gluing them to the peritoneum. The transverse colon was red and congested; the descending section and sigmoid flexure were almost gangrenous, and the peritoneum in a condition similar to that at the opposite side: mesentery highly congested. On taking out the hollow viscera and slitting them up, the stomach was filled with a quantity of dark muddy-looking fluid, exactly similar to what he had been passing: the mucous coat was pale. In tracing down the mucous coat of the intestines, two patches of inflammatory congestion were found, one at the origin of the jejunum, the other close to the ilio-cæcal valve. In the act of detaching the colon its wall gave way, and, when laid open, the whole of its mucous lining was found to be studded with round ulcers, averaging from the size of a bean to that of a pea. The folds were thickened and presented, in ridges, a bluish black sphacelated appearance, the intervening spaces being studded with the cupped-shaped ulcers. Some of these had penetrated so far as to be merely covered by the peritoneal coat.

Liver.—Natural in size and colour; four small abscesses were found on the under surface of the right lobe, the largest not exceeding a pea in size.

Remarks.—This case was most obscure from first to last; the patient passed neither blood nor mucus, and was free from tormina and tenesmus, yet the state of the great intestines presented, in a marked degree, the lesions considered to be characteristic of dysentery.

CASE II.

Private E. R., aged 30. 8 years' service.

Disease.—Hepatitis Acuta.

A hard drinker.

June 6th, 1866.—Admitted with severe purging, straining, and griping; was discharged ten days before, having been treated for piles. The stools not dysenteric in character; has a jaundiced look, and complains of pain at the epigastrium and in the region of the liver.

Ordered Ipecacuanha and fomentations; leeches to side and around the anus; astringents subsequently prescribed.

7th.—Leeches repeated and salines ordered.

8th.—Leeches relieved the pain; he is feverish and bathed in perspiration; straining a good deal at stool with no result but the escape of gas.

Salines continued.

12th.—Pulse full and slow; stools frequent, thin, offensive and muddy; no blood or mucus; on manipulation no pain is felt over the surface of abdomen, except in one circumscribed spot about an inch above the crest of the ilium.

Vespere.—Skin cold and clammy; stools not so frequent.

15th.—Weaker, pulse just perceptible; abdomen tympanitic; complains of no pain or uneasiness. Bowels unmanageable, and constantly pouring forth fœtid, dark colored fluid; enemas rejected soon after their administration.

5 P. M.—Face flushed; pulse quicker and less compressible; skin hot and dry. No improvement.

17th.—No fever; pulse much fallen, very feeble; purging continuing and power over sphincter completely lost; great pain on pressure along the colon, especially in the right iliac region and over the sigmoid flexure.

Died at ½ past 4 o'clock P. M.

Post mortem appearances 17 hours after death.

Abdomen.—On opening the abdomen the liver was found extending two inches below the margin of the ribs, and pressing the stomach to the left side: the wall of abdomen glued to viscera. Omentum covered with pus and adhering by lymph to the intestines. On throwing back the right section of the abdominal wall, pus mixed with feculent matter welled up from the iliac fossa, and on further examination the whole of the great intestines was found to be rotten from gangrene, the contents having passed at different openings into the cavity of the abdomen. The stomach and greater part of the small intestines were healthy in structure.

Liver.—Enlarged and mottled on its convex surface, with a thin layer of lymph spread over its inferior aspect. Parenchyma pale; vessels congested.

Remarks.—In this case the liver was, to a certain extent, engaged, but it is fair to conclude that the diseased action extended to the organ rather than had its origin in it, and might have been arrested by early bleeding from the arm.

Case III.

Private J. S., aged 41. 19 years' service.

A hard and constant drinker at Home and since he arrived in this country.

June 16*th*, 1866.—Admitted to-day with severe purging, griping and straining; passing small quantities of blood.

To have Castor oil and Tinct. Hyoscyami.

17*th*.—Purging urgent, stools dark and slimy.

To have one scruple of Ipecacuanha in infusion with Tinct. Opii. ʒss. and to be repeated at 3 P. M.

5 P. M.—Complains of pain around the margin of ribs.

To have 12 leeches applied and to take one grain of morphia at bed time. Castor oil in the morning.

18*th*.—Pulse small and weak; skin rather moist; has only been once at stool during the night, stools more natural in appearance; complains of no pain when the abdomen is examined.

To have one dose of Ipecacuanha in infusion.

20*th*.—Bowels still irritable; stools dysenteric; perspiration profuse and cold; pulse small and weak.

22*nd*.—Bowels quiet, and general symptoms much better; liver enlarged.

To have a dose of P. Jalap. Co. grs. xx.

27*th*.—Enlargement of right side and bulging.

28*th*.—He has now got congestion of both lungs, especially of the right; scarcely conscious.

July 4*th*.—No improvement; pulse better; sleeps continuously. Liver considerably enlarged, extending 3 inches at the least beyond the margin of ribs; complains of no pain; cough short and dry, but not troublesome. Tongue furred.

5*th*.—Tongue dry and furred; skin hot, dry and harsh; pulse rapid and hard; face flushed; very little cough; thirsty; otherwise comfortable.

6th.—Distinct fluctuation felt between the eighth and ninth ribs with slight œdema of the surface, dyspnœa urgent during the night; introduced a trocar and drew off about a pint of sero-sanguineous fluid, having a fleshy sickly odour, no relief given by the operation.

Noon.—Pulse fallen very much; skin hot but moist: seems comfortable.

Continue stimulants.

5 P. M.—Drew off about 14 ounces more of the fluid.

7th.—Wandering; but answers intelligibly when spoken to; pulse 126, soft, and compressible; passed his urine in bed; bowels not opened.

Continue stimulants.

6 P. M.—Removed trocar and drew off about 32 ounces of the same description of fluid mixed occasionally with pus; pulse feeble and not to be counted; countenance livid; short cough and urgent dyspnœa; constantly plied with stimulants. Abdomen tympanitic.

8th.—Slept about an hour during the night; sero-purulent matter has been discharging freely; pulse feeble and rapid, features sunk and livid.

Enemas of Beef tea with Tinct. Opii. twice.

Wine ad libitum.

5 P. M.—Great improvement to-night. Pulse 126, full and compressible. Wine to be now limited in amount; sero-purulent matter draining away in large quantities; drowsy but breathing lightly; vesicular murmur clear and distinct throughout the chest; skin moist; bowels not opened; passed his urine freely.

9th.—A restless night. Pulse 132, distinct but weak; skin clammy; his expression more natural. Abdomen flaccid; tongue brown, dry and cracked; no difficulty of breathing; matter oozing away constantly; passed his urine; bowels not opened.

To have a dose of Castor oil and Beef tea enemas.

10 P. M.—Dying.

10th.—Died at 4 A. M.

Post-mortem appearances 8 hours after death.

Abdomen.—Bowels distended with gas.

Liver.—Enlarged, both lobes extending about four inches beyond the margin of ribs and glued to abdominal walls by lymph, but easily separable. The surface of both studded with tubercles of a dirty yellow color, varying in size from a pea to a walnut. On raising the liver the right lobe was found to be adherent to the duodenum, mesentery, kidney, supra-renal capsule and colon, and on separating it from these attachments, a thin bloody fluid welled up. When the diaphragm was lifted from the upper surface of the gland, that muscle was found to have formed the roof of an abscess that had completely excavated the organ, and which was now filled with congealed blood.

Remarks.—The sudden termination to this case is no doubt to be attributed to the rupture of one or more of the many vessels found passing from side to side of the cavity.

CASE IV.

Private J. W., aged 28 years. 7 years' service.

Disease.—Dysenteria Acuta.

A very hard drinker at Home and since arrival.

July 19*th*, 1866.—Admitted yesterday with violent purging, the stools containing blood and mucus; leeched freely over the regions of the colon, and now free from pain or uneasiness in that region.

Ipecacuanha in full doses.

24*th.*—Stools frequent and dysenteric in character; great irritability of stomach.

25*th.*—Irritability of stomach still continues; very weak; stools frequent, but containing feculent matter.

To have Ipecacuanha by the rectum.

28*th.*—Weak and prostrate; stools frequent, but their character considerably improved.

1*st August.*—Worse; stools liquid, bloody and mixed with shreds; tongue dry, brown and furred; pulse full and quick; pain when his belly is manipulated.

To have Acetate of Lead injections twice a day.

Was able to keep a scruple of Ipecacuanha by the mouth.

2nd.—Slight improvement ; profuse perspiration ; stools frequent, liquid and bloody; tongue slightly moist and cleaning at the edges.

To have Ipecacuanha, two doses, by the mouth.

3rd.—Died at ½ past 1 o'clock A. M.

Post-mortem 11 hours after death.

Physical appearance.—Emaciation ; rigidity of muscles; marks of treatment on abdomen (second attack within the year.)

Abdomen.—Liver enlarged and adherent to abdominal wall, intestines and omentum glued together. Inflammatory exudation along the ascending colon and slight contraction at commencement of sigmoid flexure ; gangrene and obliteration of cæcum with extravasation of contents. The liver studded with numerous deposits of yellow tubercle in all stages of advancement, and varying in size from a mere speck to the dimensions of an egg. Gall bladder filled with a serous looking fluid. Inflammatory patches along the course of the small intestines.

Remarks.—In this case the dysenteric symptoms were well marked, but the hepatic complication did not manifest itself during the treatment of the case.

ART. XII.—*A Few Practical Remarks, and Reminiscences, bearing on Asiatic Cholera, and the best Prophylactics, as well as Antagonistic Means to resist the Poison, when it has invaded the system.*

By Surgeon Major J. MACBETH, M. D., Surgeon, 16th Queen's Lancers.

I wish as a preliminary to state, I do not propose to offer any theory, or advocate any special mode of treatment, my principal object being to submit to the profession that there is, as yet, no specific form of practice which has afforded any decided proof of its being superior to, more effectual, or successful, than those therapeutic agents used and relied on five-and-twenty years ago. In my own treatment of the disease now, I have almost discarded Opium, and substituted Quinine.

Cholera, if I recollect, was first prominently noticed in Asia at the Sunderbunds in Bengal; my first recollections of it date so far back as 1835-36 in Edinburgh, where I was then a Medical and Humanity Student at the University; the disease first appeared, I think, in Sunderland amongst sailors. A number of Students, myself amongst them, placed our services at the disposal of different medical men who had charge of reception houses. There was a great panic, and all who could, left the city; the different remedial agents and plans attempted were very numerous, yet, the most general, and much the most firmly relied on was, *Calomel* and *Opium*, but, I saw transfusion employed, as also injections into the circulation, of various salts, and amongst other agents, Oxygen gas was introduced to the circulation, under an idea, that want of that gas in the blood was the real cause of the disease, its concomitant symptoms and fatal results. I give a list of some other plans of treatment, which have been published and advocated from time to time. It is too long for me to recollect the relative results of each separate mode, amongst others, common salt, perhaps, proved the least injurious, but I do recollect that all were speedily abandoned, one after another, while Calomel and Opium with Stimulants, were again resorted to.

LIST OF DIFFERENT KINDS OF TREATMENT OF CHOL

1st. Stimulants! I think, save when administered
the utmost care and watching, and only as an aid to
up the patient's strength and spirits, while under other t
ment, it is the most mischievous and fatal of all plans;
like whipping and spurring an exhausted and beaten h

2nd. It is a matter of grave regret to all thinking,
cated, and experienced medical men, to see and read o
reckless empiricism, patronised by men in the profes
Surely it is as unwise, as it is clearly unjustifiable, t
experiments on suffering humanity, without a theor
any kind, either your own, or some one else's, yet it w
appear there is no quackery too contemptible to be p
nised by men occasionally.

3rd. The two last instances of lay empiricism have sp
ly rung their own knell, I mean Strychnine and Camp

4th. Opium, as a principal agent in the treatme
Cholera, I believe to be inadmissible and injurious,
ducing as it almost always does, congestion, either o
brain or some other organ.

5th. The cold douche, with friction, alternated by
and gentle stimulants, I have seen successful in som
stances.

6th. It is little use telling us of any form of treat
extending over days, in a disease which when fully dev
ed proves fatal in four, six, and twelve hours.

7th. Half baking the patient in an oven, Sesquicarb
of Ammonia as a stimulant.

8th. Carbonic Acid and Carbon in various forms.

9th. Sulphuric Acid.

10th. Eliminative treatment, particularly Castor oil, w
according to my observation, simply eliminates the littl
mina left for resisting the poison, and the patient d
little sooner than he would have if left alone, or si
nourished.

11th. The Astringent treatment, as Acetate of I
Tannin, and other Astringents, quaintly designate
some "the Corking-up treatment," has been tried but
no satisfactory result.

12th. Ipecacuanha in full doses and in mild cases, is to have given great temporary relief, and to have produced considerable reaction, which I quite believe and understand, whenever there is foreign or undigested matter in the stomach, whether bile, acid, fluids, or food ; every one has seen and many experienced, the immense relief obtained for the time by emetics. The Romans at their cœnal orgies, made this knowledge the means of gross indulgence.

13th.—Chlorodyne seems to be the most soothing and least injurious form of sedative narcotic, but it is only alleviating, not curative.

My next experience of Cholera was at Meerut, Bengal, where these were then quartered, European Artillery, one Cavalry and two Infantry Corps, when a terrible outbreak of Cholera occurred; the Regiments were the 1st Battalion H. M.'s 10th and 29th Regiments, and the 16th Queen's Lancers. The disease, as is its normal custom, assumed a most virulent and fatal form at first, the different hospitals quickly filled, and it proved fatal so very rapidly, in six or eight hours after admission, as to leave little time for the fair trial of any mode of treatment. This state of affairs, as is unfortunately too often the case, produced a panic, and a dread of going to Hospital, which still further exaggerated the evil. Indeed it is well known to all experienced in the treatment of this terrible disease, that unless you begin sufficiently early to defeat the advance-guard of the enemy, when he arrives in full force, your chances of successfully coping with him are most wofully diminished. During the epidemic alluded to, over three hundred Europeans fell victims before the disease had run its course, amongst others, "General Considine," whose brother served in this Presidency, his death was looked on as a national loss to the Army, he was seized, and died, all within 20 hours. This epidemic was in nearly every instance of a violently spasmodic type, accompanied by uncontrollable purging, and distressing vomiting, with burning thirst, and excessive irritability of stomach, the cramps coming on in paroxysms so severe as to elicit from strong men cries of agony. One very curious instance occurred in H. M. 29th Regiment, worthy of a passing notice; four men, each the comrade of the other, came to hospital as volunteer attendants all from the same room, and they all died one after the other, within 24 hours: the Surgeon determined to stop the volunteering; a hospital orderly who had been in that situation 18 or 19 years, attended the fourth, he too was seized and died. Surgeon Taylor and myself had him placed in the sun, head protected, and stripped naked, one of the then modes of treatment, and frictions with Turpentine employed. The Surgeon was attacked the same night, and only just escaped with his life. The principal and most successful treatment,— if the term may be permitted under such miserable circumstances,—was Calomel and Opium, frictions, stimulant enemata, and moderate stimulation "per orem," with occasionally mustard sinapisms; but it is necessary to add, that in no small number of cases where the original disease had been fairly mastered and routed, the patients sank from what was then termed, "secondary fever," with metastasis to the brain, lungs, heart, liver, stomach, kidneys, or some vital organ,—the miserable result, violent congestions and death.

A curious instance of the inexplicable manner in which cholera seizes its victims, occurred in the 10th Hussars, the year before I was gazetted to that corps, in 1848, when it ran down the east side of one long barrack-room in Kirkee, attacking almost every man, and not one on the opposite side. Is Cholera contagious or not?

Since then, I have been amongst cholera patients in most parts of India, in the three Presidencies, in camp, in the field, and in quarters. I have seen a great variety of treatments adopted, with different results; but my experience has convinced me there is not one of them to be relied on. Where this as yet almost unknown disease attacks in its most virulent form, until the insidious poison,—as mercifully, always happens, after a time,—diminishes in intensity the percentage of deaths to attacked, is most terribly and discouragingly great, treat it as we may. But there is this to be said, any one who has once seen Asiatic cholera, properly so-called, whether a professional man or not, never *can* forget or *mistake* the disease for any other, nor any other for it. To illustrate my meaning, I shall offer a short description. The attack is nearly always more or less sudden at LAST, although it is certain what is designated premonitory Diarrhœa very frequently precedes it, which, if attended to forthwith, the disease may often be warded off; the earlier the notice, and that, by every half hour, the greater the chance and hope of success; still when it has become *developed cholera*, the symptoms present themselves very rapidly;

as diminished animal heat; the entire retrogression of the circulation from the surface; generally despairing, always painfully anxious, countenance; the pinched nose and features; the sunken eyes with surrounding dark areola; cold tongue; weak, nearly inaudible, stridulous voice, almost a whisper, the peculiar odour of the exudations from the pores of the skin, its bluish black tinge, cold, clammy feel, and, if one observes the odour, it is almost identical with that from the rice-water evacuations. There may be no cramps, comparatively little purging, and no vomiting, yet I have seen this form of the disease less amenable to treatment than much more painful and violent phases of it, with constant vomiting, purging, and violent cramps; the patient sinks, sinks, sinks, never rallies, and dies *poisoned,* his system refusing or unable to accept aid from any remedial agent. In such cases the most effectual means I ever saw adopted are, cold douches, then frictions, warmth, and the douche repeated, till the balance of the circulation becomes restored; then carefully administered nourishment, with gentle stimulation. Still even in this form no man who knows what cholera really is, *can,* I again say, mistake it for any other disease, nor any other disease for it. That ignorant men, professionals, have mistaken or effected to mistake Diarrhœa of different forms for Cholera, &c., I know; and that such attacks may degenerate into an ultimate attack of Cholera, if the poison be about. I also know that all such states of the body are predisposing to disease and render the individual affected liable to any prevailing form of malaria or other poison about. But I contend, the choleraic poison when received, requires a certain prepared state of the system to germinate, incubate, and exert its full and fatal effects: then, as in all poisoning, if the resisting powers of the system are greater than the poison, the patient will recover, *without treatment,* if the reverse, he *must* die, unless the powers of life be aided and supplemented by treatment. Surely this fact ought to render those who promulgate the non-interference doctrine ashamed of their pusillanimity and want of knowledge. There is nothing more depressing than fear, and when despair seizes a cholera patient he generally succumbs; therefore, in all epidemic attacks of cholera amongst troops, or any large bodies, one of the best and most effectual prophylactics is, (next to having all barracks four thousand feet above the sea's level, which I believe to be the only certain prophylactic) to take every means for occupying the mind, and making the people cheerful. Of course perfect sewage, and the immediate burying of every excretion, the fumigation of the ward or room by Chlorides, Carbon, Condy's fluid, and other deodorants and disinfectants: all bedding or clothing to be thoroughly cleansed and disinfected, or, better still, *destroyed*: free perflation, good food and warm clothing (let it be all woollen); are essentially necessary as well. But when the disease has once fairly shown itself, there are no means half so effectual as a radical change of locality; the more open and free the new locality is from all surrounding obstructions to perfect perflation, as trees, buildings, &c., the better (an open plain or rising ground best of all). I have rarely seen this fail with reference to troops, and in many instances the disease has been totally arrested on the second or third day *when sufficient tent accommodation* or barrack rooms were obtainable. Such an instance occurred to me when the 74th Highlanders, on the eve of embarkation for England, were crowded into a confined, dirty, lately-occupied, and infected camp, either through the ignorance or carelessness of those concerned. Seven men were dead in nine hours. I went personally to the Commander-in-Chief, and got special permission through the Adjutant General to move the camp to Palaveram. The disease *ceased* from the time of removal, yet I was reprimanded by a Divisional Officer for leaving Guindy camp to accomplish this, and obtain efficient means for the treatment of the disease, which were not at my disposal in camp, and not sent till late the following afternoon from the Presidency Stores.

To escape Fevers, Insolation, and Cholera, build Barracks 4,000 feet above the sea's level; if on the plains, build on high open arches, to give perfect perflation. Have also sufficient superficial space, proper ventilation, a comfortable couch, and first-class food, with good bedding, abandoning the present boards and trestles (mere vermin houses). What is the reason that men marching, in tents, have occasionally, though moved daily, been almost decimated? Nothing is simpler than the reply;—the most unjustifiable manner in which they are crowded together on the march, lying on the bare ground, ten or twelve men in the present privates' tents. On a cold night they shut up every crevice, there is no attempt at ventilation from within; on the ground they receive damp or noxious vapours into the lungs, if present;

but at all events between the hours when they go to sleep and get up in the morning, they must be breathing over and over again, the carbonic acid and foul used-up air exhaled from the lungs of each other, evaporations from the skin, and from other sources not necessary to enumerate. But the evil does not end here, the men get up enervated, very little refreshed, and if there is any poisonous or malarious influence about, their systems are being carefully prepared to receive them, with the best prospect of producing the most deleterious effects. Again, this is not all ! ! the Khunnants ! (Walls of Tents ! !) saturated night after night with such gases and exudations from the skin, earth, and other sources, are not spread out to dry and become exposed to free currents of air, but tightly rolled up, placed in selleta bags, and carried on to the next camp, there again to be exposed to the same injurious influences. What then can a change of locality do against such odds ? Hence the reason why disease accompanies, and is not left behind by camps ;—and so it must be till men are raised above the level of the earth, and have proper superficial space, with free circulation of fresh and wholesome air underneath them to breathe, together with the means of escape for foul air and vapours provided for above them. On the present system if they escape cholera, or fever, the chances are the seeds of dysentery or rheumatism are received to germinate, incubate and produce baneful results at no distant period. If no better plan can be suggested, let there be at all events two sets of tents, one to be sent on, the other to remain, and be thoroughly dried after each march. Half a dozen deaths would actually cost more to the state than the additional expense necessary to carry this into effect.

I marched with a Regiment through, I believe, as malarious a jungle as any in this part of Southern India, without the occurrence of one case of fever or bowel complaint, and only one admission into Hospital, that, a case of cholera which a man contracted by drinking in spite of all warning from a sluggish stream impregnated with decaying vegetable matter ; even he recovered. This satisfactory state of affairs continued the whole way between Ootacamund down by the Segoor Ghaut to Bellary, which result I attribute to the fact, that I obtained permission to carry a light charpoy for each man, having given all prophylactic doses of Quinine before marching each morning. The result of this experiment was at all events encouraging, and if ventilation and proper superficial space were added, a still further success might be anticipated. It is right to add I had hill drinking water for the men carried as far as Ghondlepet, in chatties on coolies' heads, and with the column in mussacks (leather bags), by no means a trifling adjunct to comfort and safety. On all marches where the slightest suspicion of the quality of the water is entertained, it ought to be filtered first, then boiled and cooled.

There might be some mode adopted of swinging hammocks without much additional weight. I suggest that a sort of hammock be firmly attached to the wall on either side of the tent with two battens run across to be fixed outside into the ground and supported on a cleft pole or standard, again supported by stays attached to a long pge or pegs outside. Hammocks so arranged could be strapped up to the walls during the day; this plan would also save the daily issue of straw: let Government offer a prize and they will speedily get good plans. The authorities might take warning; witness what happened to the 43rd marching between Bangalore and Madras, more recently on the march from Mhow. The former lost by cholera between the 20th and 31st 41 men, 5 women and 13 children. Five picked men of the 74th were marched through the Segoor and Bandipore jungle against my formal and official remonstrances, (the same the whole corps afterwards marched through without a case of fever). When they reached their destination, Bangalore, four of them were struck down by malarious fever, two narrowly escaping with life and shattered constitutions. However, I am digressing sadly, and fear this will prove a very desultory production; but, as it pretends to no originality, and can only be useful as a history of facts, results, and their causes elicited by long experience and careful observation, I trust any prolixity may be pardoned.

To return to cholera; since I have read of and seen the disease in India I have witnessed a great many different forms of treatment, seen some tried and read of a great many others; I will instance the cold "douche" which I have practised with both results,—success and failure, I regret, however, to state the latter predominating. Then Dr. Honigberger, the Lahore Durbar Surgeon, a German, and his quassin introduced into the system through the skin and tissues, by which means I have heard of many cures, but though I have witnessed it tried, never saw one, or indeed any effect at all result. Strychnine I have also seen tried in three instances, at first apparently with marked success, but two out of the three ultimately died, and I confess I anticipated no more favourable result. Then there is Salt, Brandy and Salt, Camphor, Castor oil, Ipecacuanha, Red Pepper, Battley's Sedative, Warburg's drops, Omum water (a native remedy), and a host of other so-called specifics and nostrums. I have come to the following conclusions that, in most of them, where they are simply not injurious they may be tried with impunity, but they are individually and collectively totally unreliable and often *actually* injurious. I do think it is not a little presumptuous in laymen to write so imprudently, and recommend so confidently their pet remedies; surely if they would pause to reflect, they might be a little more modest, if they will please to consider that the time, brains, energy, and experience of professionally-educated gentlemen of the highest abilities in all countries have been devoted to study, experiment, and research, with a view to the elucidation of this great mystery, for the terms of their lives, and have as yet failed. Still let us not despair,—how long was variola a depopulating and devastating scourge of whole nations, but ultimately "Jenner" untied the knot. Let us hope we may yet have a *Cholera "Jenner."* At all events with such examples, as Jenner, Harvey (before whose time the circulation of blood was quite as great a mystery as cholera), Hunter and other benefactors of the human race, we may live, study, search, and hope. But what must be said to men in the profession who deliberately talk of, write about, and offer specific remedies, boldly stating they do not lose more than three or four per cent. They have either been treating some other disease, certainly not cholera, or they cannot be writing honestly and truthfully; for any one who has had extensive experience of cholera will tell you that every attack has been more or less influenced by one or other, often by *all* the following circumstances:—the virulence or otherwise of the poison, the locality, the climate, the season, the nature of shelter afforded the patients, the ventilation, food, clothing, altitude, (this "most important,") the constitution, habit of body, and temperament, and a variety of other causes more or less directly or indirectly affecting the disease and its result. I say, therefore, that any professional man bold enough, with so many biassing influences, to lay down any one or specific mode of treatment, is either deceiving himself, or attempting to deceive the public. As an example, during an outbreak of cholera in Bengal a medical man foolishly, boastfully, and wrongfully wrote publicly to the effect, that any professional man who lost more than five per cent. of cholera *must* be *ignorant* of his profession, and unworthy to practice it; in less than a year after the promulgation of this rash, unjustifiable opinion, the Regiment he was in charge of was attacked, the loss was over 60 per cent. of those attacked. What you have todo then, in cholera, is, to be prepared for *every event*, you must treat symptoms as they occur, you must watch, modify, and change, or interrupt your "modus operandi," you will discover that the treatment you found successful in one form of the disease, will prove *actually* injurious in another; you *must watch*, I say, and treat each *symptom* as it manifests itself, to be *even useful*, and palliative, much more to be successful.

Calomel and Quinine in varied doses according to symptoms and circumstances are my great stand-by; given at first, as a rule, in full doses, afterwards continued in smaller ones, till an impression is made, or you have failed. Keep up your patient's strength and spirits; be very guarded in stimulating; effervescing wines, or drinks, iced, (be liberal with iced water) are the best and most grateful; if the surface is very cold, apply sinapisms, turpentine frictions, and moderate heat; give if necessary small stimulant enemata; *nourish* the patient with iced chicken broths, or beef-tea, in very small quantities, taken at short intervals; try to induce sleep,—applying ice to the nape of the neck, is a simple and good plan, or if you deem it prudent, give Morphine or Cannabis, also a little of the Chlorate of Potash in solution with Spt. Æth. Nitros., Potass. Nitras and Tinct. Hyocyami; watch for, and guard against metastasis to, and consequent congestion of, the several organs, and endeavour to ward it off, or when present, relieve the affected organs; the kidneys and bladder are nearly always more or less involved, suppression of urine may be almost laid down as a concomitant of cholera, and very generally when free micturition is restored, you may congratulate your patient and yourself on his safety.

There are a great many opinions about the best prophylaxis against attacks of cholera, and experience has proved beyond dispute that the greater and more efficient the precautions taken—more particularly bearing reference to free perflation, good sewage, wholesome water, warm clothing, a sufficiency of nutriment—the milder will be the type of the disease, the shorter its duration, and the smaller the mortality. Many theories have been started as to the origin of cholera, ingenious, scientific, and probable, as also some very silly ones. Peculiar conditions of the atmosphere, a superfluity of electricity, a scarcity of ozone, and lately the presence of a peculiar bluish vapor, in India red, in Scinde yellow :—there may be more or less foundation for all, or any of them, but with reference to soldiers, amongst whom my experience chiefly lies, I would remark that the barracks for the men, their food and clothing, with proper attention of course to cleanliness,—"there is, in most barracks, an entire absence of plunge-baths, and very generally a most defective and insufficient lavatory system and sewage,"—if right, these are all that is necessary to insure the best state for effectual resistance, both individually and collectively, to an attack of the disease; but most unfortunately in a majority of instances, notwithstanding all that has been written and urged by medical men, those are not as they ought to be. What is even still more discouraging, an old and effete routine is perpetuated and persisted in. No one wishes to deny that the comfort and sanitation of the soldier has greatly improved of late years. I will illustrate what I mean with much diffidence, and with every feeling of respect to all constituted authorities; yet when I write at all, though deprecating the intention of offending any one, I always have written, and must continue to give my opinions freely and honestly.

It has been admitted on every hand, I believe denied by none :—

First, that the conservancy means at the disposal either of Divisional or Regimental authorities is woefully short and insufficient.

Second, that while it has been so fully established as a necessary and most important item in the sanitary necessity of buildings in the plains of Hindoostan to have the dormitories at all events, and, if possible, all the rooms inhabited by Europeans, as far from the surface of the earth, its exhalations and evaporations, &c., as practicable, to be effected only by building barracks on arches; while in this Presidency and this station (surely it would be an admirable opportunity to serve for experiment and example in building the Race Course Hospital to erect it on arches, and with greater regard to properly divided and thoroughly seggregated wards) in barracks finished, in process of erection, and now scarcely begun, this has been entirely ignored. I also allude to the old cavalry barracks, where in consequence of the rough and unworkmanlike style in which the rooms have been paved,—in no manner can this be attributed to the Executive Engineer,—I am told the floors cannot be washed without saturating the earth below, through the open cracks, with moisture, which, in the course of time, when heated returns through the same channels as admitted the water, in the form of unwholesome vapours, gases, bad musty odours, disagreeable, if not unhealthy. Now the remedy for this is so simple and obvious, that it is to me, and many others, an inexplicable puzzle why it has not been corrected. Even three feet of the granite, so abundant in every direction round Bangalore, or of solid masonry below the flags, so as to permit a space to exist and a free current of air between the flags and the ground, would obviate, and do away with this most objectionable state of matters ; yet even in the new Race Course Barracks the same fault has been perpetuated. Nothing can be more clearly proved than the obvious advantage of building barracks on arches. Room could easily be left for free perflation, while the spaces could be used as reading or store-rooms, work-shops, amusement places, &c.

Third, the diet of the soldier is by no means what it ought to be, either in quality or variety, nor what it is contemplated by Government orders to make it. Yet when Regimental executive officers in immediate surveillance represent the indifferent or often worse than indifferent quality of rations they are sure to offend some one, and are met by such remarks as, the season is a famine one, the contractor is losing, &c. I submit this is all wrong; the soldier ought to have his proper and nutritous rations, it is *his* right, and it is equally for the interest of *Government* that he should obtain it. If the contractor, in his love of speculation or greed of gain, makes a bad bargain, let *him suffer*, *not* the soldier; or if the Government wish to be liberal to the contractor, supplement the rate, or give fairly remunerative rates, and never accept such tenders as must manifestly result in loss and attempts to evade that by offering inferior rations. It is clear as light that if the ration laid down as necessary to nourish and keep a soldier in good health is deficient in nutritive quality, he *cannot* be in good and robust health, or ready for any service he may be called on to perform. If the food he gets is deficient of nutritive quality, as I unhesitatingly assert it very often is, and if men thus fed are attacked by serious disease, they do not possess the stamina and power efficiently to resist it; the results are a certain amount of mortality, and a good deal of invaliding. It is therefore bad and false economy, more shortly waste of valuable, most difficultly replaceable, life, and, in actual fact, *extravagance,* the State suffering in finance, and the men not in that high state of efficiency they ought to be.

Fourth, I would have the canteen in every corps open under proper restrictions (easily provided for in every well regulated corps) the whole day. Now, a soldier knows he can only get malt or spirituous liquors at certain hours, and, as a rule, he goes there and drinks his allowance, whereas if he could go at any time, there are many men, on many days, who would not go at all; at all events, avoid the poisonous mixtures they resort to the bazaars for, under the existing system. With further reference to canteens, there is one other argument in favor of allowing them to be open, which though a negative one, is nevertheless practically of much importance. If a soldier in his canteen gets drunk, becomes noisy, or gets stupid, he is at once removed, cared for, and properly looked to. If outside in the bazaars, he most probably lies down, or walks about in the sun, and sows the seeds of fatal disease. The canteen ought to be a comfortable, well-lighted lounge for the soldier, where he can have his glass of beer or grog, and a gossip with his comrades. The plan of having grog-tubs, as on board-ships, and distinct hours in barracks, I know often results in young soldiers, nay even boys, drinking their allowance, when it is positively distasteful to them, because they think it would look unmanly not to take it. One other suggestion, let the Government give up supplying malt liquor, put a contract up to auction, let there be kilderkins, hogsheads and half hogsheads so as better to regulate the daily quantity on tap.

Fifth, one of the most prominent defects in the present plan of constructing barracks is the sacrificing everything for height. No greater error can be imagined; it is a positive disadvantage to have rooms above a moderate height, it produces undesirable, unsanitary draughts, and obviously does away with that great desideratum in all barrack-rooms, a good large superficial space:—witness Trimulgherry barracks at Secunderabad, where both the Royals and 74th Highlanders and 12th Lancers suffered from a severe and fatal form of dysentery, generally referred to that very cause, while the magnificent and imposing-looking Hospital where they were treated, was in those days only a succession of long open corridors, without an attempt at segregation. There is want of segregation in the Race Course Barracks here, all the rooms are too large and too lofty. I am of opinion that not more than ten or twelve men ought to occupy any one compartment; all should be well and sufficiently lighted, and not, as now, giving the rooms an aspect of tombs or subterranean passages; the men ought to be able to read and amuse themselves at home, they would then be satisfied to stay there, become more intimate, and spend their leisure hours in comfortable, cheerful, and well-lighted rooms; this would do away with the desire and habit of going nightly to the bazaars in search of such pernicious indulgences, I cannot call them enjoyments, as ultimately ruin them physically and morally.

Such are my humble views as to the best prophylactic means against not only Cholera but all other severe and fatal epidemics. The eccentricities of the progress of cholera at different times no one has yet been able to approach a solution of. I have myself seen the disease take nearly every man along one side of a room, and not touch one on the opposite side, as in the instance mentioned of the 10th Hussars.

I have again to apologize for the very desultory and somewhat unconnected form of this paper, and to repeat that there is not the slightest originality claimed for any paragraph, it is a mere epitome of facts gathered from time to time, with the deductions they have suggested to me as legitimate. I write in the hope that some abler man will take the matter up, but solicit the attention of Government to the amelioration of some matters requiring nothing but proper attention and system regarding the defects set forth by me—their existence or otherwise calls for investigation. To substantiate the veracity and correctness of the statements I have ventured to make, will afford me much pleasure if called on at any time.

I may not conclude this paper without expressing great regret, because, while it is admitted on all hands that the suggestions offered by Medical Officers from time to time are not only most advisable, but if carried out would add to the comfort, efficiency, and content of all concerned, indeed, in most instances are absolute sanitary necessities, and effected would produce a large saving to the State, it is most discouraging to zealous men who bring defects prominently under notice, not unfrequently to the prejudice of their own private interests, because they are obliged to expose deficiencies the existence of which are naturally not agreeable to those who are vested with the power to remedy them, though admitted by the authorities, by Commissioners, and all at home and abroad, are frequently dismissed, with such admission, and, perhaps, a recommendation to remove the defects complained of, still year after year they remain pretty much as heretofore, and all seems to go by default.

I read in the *Madras Times* of the 3rd October 1866, an able leading article by the Editor, containing a notice of Dr. Goldie Scott's Report on the employment of soldiers out of doors on the Himalayas, which is only confirmatory of what occurred in the case of the 74th Highlanders on the Neilgherries, when employed in building the Wellington Barracks, and scarping and levelling the ground in their vicinity, the results of which, as to their sanitary condition, will be found recorded in my special report on "Hills and Plains," republished in the *Madras Quarterly Journal of Medical Science*, vol. ix. page 81, taken from the quarterly report concerning that corps, in the period embraced between the 1st October and 31st December 1854.

The Sanitary Commission at home expressed their entire concurrence with, and confidence in, the statements contained in the report under notice, and the deductions drawn from the statements and statistical tables contained in it, strongly recommending that they should be carried out and form a basis for extending the means of accommodation for European soldiers, at such altitudes as would ensure similar sanitary advantages to those enjoyed by the 74th Highlanders when stationed at Wellington on the Neilgherries. But in this Presidency matters seem to a certain extent to have retrograded, inasmuch as the only existing barrack has been converted into a Convalescent Depôt, while so far back as 1855, a building for this purpose, in addition to barracks for a Regiment, was sanctioned, and part of the foundations actually laid on an admirable site to the right of the road leading from Wellington to Ootacamund from the South. In Bengal and the Punjab much has been done to increase barrack accommodation on the Himalayas. May I ask then why nothing is being done in the Madras Presidency? where the facilities are much greater, the sea-board close, and railways extending almost to the foot of the Coonoor Ghat. There are many excellent sites in different situations on the Neilgherries, one about two miles from Wellington on the left and right of the road leading to Kotagherry, where barrack accommodation for even a Cavalry Regiment, with their horses, might be constructed; and why not! a little judicious levelling would render even a drill ground feasible and tolerably good. If soldiers saw their comfort, safety, health, and convenience more considered, their pensions increased after their full period of service, many more limited service men, by far the most valuable class of soldiers, would take on again, and look on such a prospect as much better worth re-engaging for than any increase of bounty. I also feel confident it would induce a better class of men to enlist, and diminish the difficulties of recruiting. The return of such men after their discharge to their native places with the recollections of having been well and considerately treated while serving, and after their discharge, retiring with a sufficient pension to live respectably, would do more towards efficiently recruiting the army than dozens of recruiting serjeants.

ART. XIII.—*Thoughts on the Etiology of Cholera.* By R. WILKINS, Second Apothecary, Demonstrator of Anatomy, and Curator of the Museum of the Medical College, Madras.

Read before the Madras Apothecaries' Society.

IT scarcely needs mention that Cholera, according to current opinion, is due to blood-poisoning. We know nothing of the nature of the poison which induces it, yet the notion is gaining ground daily. By several the idea of poison is regarded as a matter of fact. Though I am far from denying the possibility of the disease being occasioned by this means, I cannot, in the meantime, refrain from remarking that many of the arguments which are over and over again being urged to establish this theory appear to me not such as to warrant reliance on it. Many, even Medical men, seem unwilling to pin their faith to this particular idea; they either attribute the disease to other causes or they aver that its cause is a mystery beyond human ken.

The cause of cholera which I am disposed to regard as correct is *altered electric condition of the atmosphere,* rather I should say, a negative electric state of the air, and negative in reference to the electric condition of the body; this altered condition of atmosphere operating upon bodies predisposed by dyspepsia, gastric or intestinal irritation, &c., is the exciting cause of cholera in some, and the predisposing cause in others who become liable to the attack later in the season, if the state of the atmosphere should continue as above stated.

The human body, like other bodies, whether organic or mineral, contains a certain amount of electricity, in a sense fixed, but which may possibly vary within certain, though not definite limits, without effecting any manifest alterations in its constitution: it pervades every tissue and the blood is charged with it. This electricity has several important purposes to fulfil in the economy, many of which are known and recognized, and with regard to that which is contained in the circulating fluid, apart from the share it may take in other operations carried on in the living organism, it serves also in my opinion to keep the blood in its normal liquid condition, a fact which will be rendered evident by a careful study of the phenomena connected with the process of coagulation: it also, I believe, serves in a great measure to keep up polarity of muscle, a state implying, according to Dr. Radcliffe, muscular relaxation. It moreover is in conjunction with the force generated by the nervous system (the *vis nervosa*) which force, it must be remembered, is considered by some Physiologists as probably identical with electric fluid;* that principle to which is due the vigour of the animal constitution.

Its source is the atmosphere and the physical and chemical changes taking place in the body. My. belief is that during the process of respiration, the blood, on being subjected to the action of the air, is not only simply oxygenated, but it undergoes a far more important change, namely, that of electrization. The presence of electricity in the blood has been proved and it has been found that arterial blood is positive in its relation to venous blood. Anent the change effected in the air by the respiratory process, Mr. Orton writes, "Mr. Reid has proved by experiment that the air becomes changed from the positive to the negative state of electricity by respiration, and Volta has confirmed this inference. The general principle of the absorption of electricity by the blood in its change from venous to arterial blood in the lungs is likewise assumed by various respectable authors." He continues, "Nature does nothing in vain; there is no substance in the whole animal economy with which we are acquainted that does not answer some important end, and we cannot, for an instant, suppose that *the most active and momentous principle in nature can thus be commonly taken into the system to remain in it inactive and useless.*† It may then be strictly inferred that the supply of electricity is necessary to the animal economy, and that the diminution and suppression of it may produce disease or death."

When the air by the operation of any cause is being deprived of its electricity,—rendered minus, in other words,—an action having for its object the attainment of its electrical equilibrium is simultaneously set up; every object within the sphere of its influence, if plus at the time, parts with some of its electricity, and man while he gives his quotum towards that end receives no equivalent from it to sustain the vitality of his blood, at least so long as the cause which is influencing the condition of the air is in operation.

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* Nerve force and electricity are identical. Dr. W. Phillip. Phil. Trans. for 1815, pp. 5 to 90. The late eminent British Surgeon John Abernethy was of the same opinion.

† The italics are mine.—R. W.

I regard electricity as a very important element in the constitution of the air, and therefore air not properly charged with it is ill-fitted for man's purpose. The atmosphere is the principal source from which blood derives its electricity, and if that element is wanting in this vivifying principle, the blood suffers impairment in its quality, and disease results.

If the proposition be admitted that the blood owes its fluidity to electricity, we can easily understand when deprived of it what must result as a consequence. In the first place, we shall have coagulation of the blood in proportion to the quantity of electricity lost, and consequent stagnation in the venous system. The symptoms characteristic of cholera occur from this altered physiological condition of the blood,—for example, irritability of the stomach from congestion of the organ, and diarrhœa from intestinal congestion; the spasms occur from disturbed polarity of muscle. When no symptoms, such as vomiting and diarrhœa, precede a fatal termination of this disease, it is very probable that the withdrawal of the electric fluid from the blood has not only been sudden, but of some considerable extent; a case like this might fairly be regarded as akin to one in which death has resulted from a stroke of lightning.

We are familiar with the fact that the blood in cholera is in a tar-like, imperfectly coagulated state. Not long ago, I remember reading a remark in one of the Medical Journals to the effect that, in a certain case of cholera, the blood was found to be in a fluid state. This, medical men will admit, is seldom noticed. It was, in all probability, owing to the blood having lost a considerable quantity of its electric fluid. I am aware also that there is a discrepancy of opinion as regards the state of the blood in the bodies of those who have been killed by lightning; some believing it to be fluid, while others state that they have found it in a condition the very reverse of this. I am disposed to think that the condition of the blood may be either solid or fluid, and that the difference is exclusively due to the character of the shock,—the fluid condition indicating a severe shock, and that the blood is in this state from being about to take on putrefactive change from having been deprived of a larger quantity of the electric fluid than was necessary to solidify it. I believe these shocks rob the body, not only of its free electricity, but also to some extent of that which is considered essential for the purpose of keeping together the various atoms of the different constituent parts of the body, and understood as chemical affinity.

It is a fact that when the air as regards its electricity is either negative or nil, dead organic matters putrefy rapidly.

This is the sum and substance of my view of the cause and nature of cholera, to corroborate which I will now refer to certain facts and observations connected with the disease, and endeavour to explain them. The explanation will as far as possible embrace acknowledged facts and be based upon the idea just expressed.

First of all, as regards the tendency of the disease to travel westward. Several writers on cholera draw attention to this fact. The peculiarity is observed not only in respect to the line of direction traversed by this disease, but by other pestilential diseases also.

No one, to the best of my recollection, has as yet offered any explanation of this very remarkable phenomenon. It is difficult, nay impossible, to reconcile the fact with the cherished idea of the disease being due to poison. My impression is that the motion of the magnetic equator from east to west influences this tendency. There are no reasons for supposing that the direction of winds have aught to do with this line of transmission of the epidemic influence. It has progressed in this direction under the most adverse circumstances, a fact which militates much against the idea of a material poison.

Secondly:—The setting in of the disease, as a rule, after mid-night, about two o'clock or thereabouts. This is owing in all probability to the great diminution in the electric tension of the air which takes place at this time. From electrical readings taken at the Kew Observatory during upwards of three years, it was ascertained that in summer the principal minimum took place at 2 A. M., and in the winter at 4 A.M. Whether electrical observations are made in India seems doubtful, but the probability is that the minima, considering the circumstance under which they occur, take place here also at the same time.

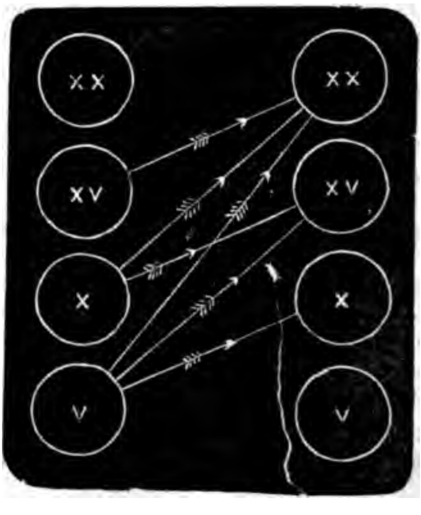
Thirdly :—Vigour of body predisposes to cholera. This is a fact which nobody having any experience of the disease will deny. We have statistical proofs also that this is the case. Dr. Balfour, (now Inspector General of Hospitals of the Hyderabad Subsidiary Force,) in his statistics of Cholera, remarks :—"One race of men is more susceptible to the influence of the cholera agent than another. The European soldiers, for instance, are much more frequently attacked with it than their native comrades, and the Madras Native troops have lost more of their strength than the Native soldiers either of Bengal or Bombay."

The General Board of Health in their report of the epidemic cholera of 1848-49, state :—"A very large proportion of its victims were in the prime of life. Out of 2,322 attacks and 1,058 deaths occurring at Glasgow in which the ages were carefully taken, the numbers attacked between 20 and 40 (1,148) were more than double those up to 20; between 20 and 50 the numbers more than doubled those who suffered in all the other periods of life put together." And from Mr. Thom's report they quote :—"It seems as if the disease had travelled along the front ranks of these, (alluding to the tallest and strongest men) indeed throughout the regiment it was the most powerful, muscular and robust men, that most speedily and generally fell victims to the malady. Any one who ever saw the splendid men in our flank companies, and will inspect table F will quickly appreciate the truth of this. It was indeed a sight never to be forgotten to behold the powerful frames of the finest men of a fine corps, who had on the evening parade as if at once stricken down and striving with the last efforts of gigantic strength to resist a death-call that would not be refused."

There is seemingly no explanation on record why this difference in susceptibility exists. If we hold to the poison theory we must abandon the explanation. The bare assertion that the European, a decidedly more vigorous individual, is more prone to be attacked than the native, wont be regarded as satisfactory, and what would appear less so, a statement to the effect that the vigorous man is more easily affected by poison, for we are in the habit of associating debilitated constitutions with proneness to be influenced by septic poisons. The explanation I have to offer is simply this. The electric force in the constitution of a vigorous man, a European for instance, is positive, and in keeping with his constitution. When compared with one less so, the vigorous man therefore is not only the first to be deprived of his electricity, when the electric state of the air is either negative or nil, but setting this aside, the first also to suffer alteration in the character of his blood from the change that has taken place in the air, unless he is protected.

Judging from the character of the diet used, the Madras sepoy must be a more vigorous man than the Bengalee or Bombay sepoy, and he is acknowledged to be so, hence his proneness, next to the European, to attacks of cholera.

Dr. Balfour remarks also,—"That the older soldiers have been less frequently attacked than the younger men." This immunity enjoyed by those advanced in age who are, it will be admitted, generally wanting in vigour is observed among all classes of people. It is seldom, comparatively speaking, that we hear of an old man or woman being attacked with the disease. The diagram given below is intended to elucidate this peculiarity. The circles on the left numbered respectively 20, 15, 10, and 5 represent the different electric states of the air; the one marked 20 indicates a high electric condition; those on the opposite side marked 20, 15, 10 and 5 exhibit the degrees of constitutional vigour, 20 being the highest, and the lines show under what electrical states of the air the different constitutions are affected.



The proportion of cases among Europeans would be very much higher were it not for the fact that they are, as a rule, better clad, better housed, and, above all, have the good sense to avoid subjecting themselves, when the disease is rife, to the influence of the ordinary exciting causes, such, for example, as exposure to night air, use of purgatives and the use of food of a kind and quality likely to derange the functions of the digestive organs. And, with regard to the natives, I may observe it is a fortunate circumstance that they are, from the character of their constitution, less liable to attacks of the disease: were it otherwise, the mortality among them would be truly appalling, and I say so because I am aware that they concern themselves very little about measures calculated to ward off the disease, and when actually attacked, seek for remedies only when it is too late.

From observations made during several outbreaks of the disease, my conviction is that a high proportion of the cases has been induced by the use of powerful purgatives, and of the deaths a still higher proportion has been owing to sheer neglect of the early use of the ordinary and well-known remedies.

Fourthly:—*State of the weather before an epidemic of cholera.* Another circumstance which gives material support to the view I have advanced is the state of the weather which usually precedes an outbreak of cholera, and which even continues during its prevalence. This state is characterized by an overcast sky, haziness of the atmosphere, probably from extreme humidity, and close and sultry nights, or by the presence in the neighbourhood of athunder cloud with a strong wind from the eastward or southward, a condition of the weather which indicates a negatively electric state of the air. Writers on epidemics notice these peculiarities in the weather and some of them lay considerable stress on them. Mr. William Leithead, some time back Secretary to the London Electrical Society, remarks, in reference to observations on the subject by several authors, "It is evident that on the occurrence of thunder storms, large portions of the atmosphere possess less than their natural share of electric fluid, and we find that many of the most destructive attacks of the epidemic have been attended with violent thunder storms, and that its ravages have ceased after the restoration of the electrical equilibrium."

In the *Lancet* a short time ago the following article appeared corroborating strongly the views advanced in this paper as regards the induction of the disease by altered electric state of the air.

"Electric origin of cholera.—We propose to call attention to the relation between cholera and electricity as shown during the recent epidemic. This relation appears so marked, that it must be considered some thing more than a curiosity or coincidence.

"We subjoin a table compiled from the reports of the Registrar General showing the number of cases of cholera in a series of successive weeks, with electrical condition of the atmosphere during the same periods.

"*September* 23*rd.*—Seven cases. None shown, except on two occasions, one positive, the other negative.

"*September* 30*th.*—Four cases. None shown, except on two occasions, both positive.

"*October* 7*th.*—Three cases; the same, but the duration longer.

"*October* 21*st.*—Forty-five cases. None shown, except positive on one occasion, and negative on the other.

"*October* 28*th.*—Thirty-four cases; nothing shown.

"*November* 4*th.*—Sixty-five cases; nothing shown, except positive once.

"*November* 11*th.*—Sixty-two cases; nothing shown.

"*November* 18*th.*—Fifty-four cases; nothing shown.

"*November* 25*th.*—Thirty-four cases; nothing shown.

"*December* 2*nd.*—Twenty cases; nothing shown.

"*December* 9*th.*—Twenty-one cases; nothing shown, except negative once.

"A careful examination of antecedent periods and seasons show this remarkable absence of electric phenomena to be an almost unique occurrence. Last year during the prevalence of the influenza, though electricty was 'not shown' in several reports, still its absence was not nearly to the same extent as on this occasion."

Dr. Pickford remarks, "The prevalence of epidemic or pestilential disease has been associated with the absence or deficiency of positive electricity in the atmosphere, and the mortality has been found to be in the inverse ratio of the amount of positive electricity with which the air is charged.

"This was especially remarked during the last visitation of the Asiatic cholera."

I will here notice one fact which might be looked upon by medical men as conclusive against the doctrine advocated in this paper, namely, that, during the prevalence of cholera, observations which were made in certain places showed that magnets had either lost none of their power or were only seldom disturbed, an event which tends to the belief that there was also no electrical disturbance of the air at the time.

Though it would be perfectly rational to suppose that a change in the magnetism of the earth, however trivial that may be, will affect the electrical condition of the air, yet I think it will be conceded that it is not every magnetic change there which is indicated by a magnet, that in short we may have magnetic alteration in the earth and consequent change in the electricity of the air, and the needle showing no variation either in dip, declination, or intensity; even the most sensitive electrometers fail to reveal changes in the electric state of the air, unless these are considerable.

Another circumstance connected with cholera, one which is regarded as favoring the view of its origin by poison, and of the transmission of the *materies morbi* from one locality to another, is the occurrence of the disease sometimes in succession, in localities distinct from one another, and its absence in others in the neighbourhood, which may be subsequently attacked. The facts expressed in the following passage from Mr. Leithead's work, I think satisfactorily combats the idea.

"It is evident that a large portion of electrified air will exert an inductive influence on another portion: and the latter, again, will affect a more remote part, so that the atmosphere above a certain tract of country may be positive, whilst at the distance of a few miles it will be negative; and between these two opposite electrified portions, or rather at some central point, we shall have a plane of neutrality as above explained.

"Again, it is necessary to remark that all, or at least many bodies on the earth's surface, upon which the air in a certain electrical state impinges, will be subject, in like manner, to the inductive influence, becoming either positive or negative, according to their various natures as electrics or conductors. The effect of this, again, will be a reaction upon the air in the neighbourhood of those bodies, reinducing a positive or negative condition, accordingly as adventitious

circumstances favor the one result or the other. Thus, eve
a small apartment, one individual may be exposed to the
fluence of a positive, whilst another at the same moment
be exposed to a negative, atmosphere, and we shall now
readily see how it can happen that the inhabitants of
town or village may be free from the ravages of an epide
disease, whilst those of other neighbouring towns or villa
are suffering more or less from the effects of the visitati
Why, even in the same town, some particular localities will
more free from the attacks of disease than others, and w
again, a certain tract of country, having for a brief per
escaped, should still be visited by the pestilence after perh
the lapse of a few weeks, the neighbouring parts be
then as free from the epidemic as that tract was at the ti
of its raging in parts around it."

The facts here enumerated go far to explain even why i
that removal of a person ailing from constitutional dise
(cholera not excepted), from one locality to another, is of
followed by results salutary in the extreme.

I am so thoroughly convinced of the utility of the practi
of removing patients ailing from certain diseases, chol
and fever in particular, from the apartment or locality
which they were attacked to even a little distance away fr
it, that whenever an opportunity offers and it is feasible
do so, I should (provided of course the management of
cases were entrusted to me) urge the measure upon the p
ties concerned.

Influence of certain mental emotions. It is a common
servation that during the prevalence of cholera, certain me
tal emotions, fear in particular, induce the disease. I ha
reason to believe there is much truth in this, and the f
seems to be owing to circumstances, such as these, operi
ing conjointly with the altered electric condition of the
mosphere, in reducing the electric force of the individual a
placing him in a condition adverse to its generation in
system.

From what I have advanced regarding the cause of chole
it might be inferred that I ignore the influence of exhalatio
from putrefactive decay of organic matters in the producti
of the disease. But this is not the case, for although I am p
pared to assign reasons which lead me to suppose that the
exhalations do not constitute the cause of Cholera, I

willing to admit that they act prejudicially on the health; and they do so either by altering in a measure the composition of the blood, or by mixing with the air virtually diminish the volume of that element taken into the lungs during each inspiratory act, and so interfere with the thorough aëration of the blood—aëration in the sense I would wish it to be understood, namely, charged with both oxygen and electric fluid. Effluvia of themselves, I believe, do not give rise to cholera. How repeatedly has the remark been made to the effect that stinks abound and notwithstanding the public health is not interfered with. In the first volume of the *Madras Quarterly Journal*, at page 499, the Editor writes, "It is curious however to remark that during the months of March, April and May, when the stench from the drains was almost unbearable, there was no cholera or epidemic diarrhœa."

We have it on record that in London during the summer of 1858, when the heat was great and the stench intense, diarrhœa was not nearly so fatal as it was usually observed to be. I could cite many more instances to the same effect, if I chose, but it is not my intention to lengthen this paper unnecessarily.

The large majority of those cases which observers are led to regard as owing in a great measure to the poisonous emanations from the sick, and from the bed clothes used by them, and from the evacuations, &c., occur, I would say, not from such causes, but from the individuals being subjected to a condition of the atmosphere similar to that which has induced the disease in the person to whom is attributed its spread.

Upon the question whether cholera is due to poison, I have a few remarks to make.

I have already expressed my belief that electrical change in the air produces the disease, and this it can do without the intervention of poison of any kind. Poisons whether detectable or not have very little to do in the causation of cholera. When the paramount cause is present these may simply aid.

The theory of poison seems unphilosophical; to say the least it is not based on very stable arguments. I have set it aside for the following reasons:—

We know nothing of the nature of the poison. We have no proof of its existence: attributing the disease therefore to this cause is an assumption, not a fact.

Because the disease has a decided preference for you people, and particularly those in robust health. It can be said with any show of reason that these are more eas influenced by poison than others.

It might be urged that the poorer classes, and, necessari the less vigorous and robust are more liable to be attack and not those who are in the height of health and vigor, a I would not be surprised if it were, for I know it is an opin believed in by many and even by professional men, but t statement needs confirmation. There are not only no stat tics to prove this, but we have reliable testimony to t contrary. The Board of Health remark that "abund evidence has refuted the common notion that cholera is par cularly prevalent and fatal among the extremely poor. T chief sufferers in the recent epidemic (of 1848-49) were n paupers, but independent labourers, artizans and the low grade of shop-keepers, classes generally not destitute of fo and clothing."

Because the tendency of the disease is to travel in a weste ly direction, despite even circumstances the most adverse—a suming the poison to be material. Most medical men, I thin believe it to be so. They aver its subjection to the laws gravity, and, on this idea they base their explanation of t fact, that elevated localities are comparatively free fro cholera, while in low marshy countries it prevails to som extent. If the poison were material, contrary winds mu materially check the westerly progress of the disease. W have evidence that they exercise no influence over it.

Because satisfactory results usually follow the early exh bition of remedies not considered specifics. If the disea were due to poison, why enforce the strict observan of the rule to make efforts to arrest it at the very com mencement?—a measure like this is calculated to preve the elimination of the poison. We prescribe remedies earl because we know that this is the safest practice. There is poison in the system; we have therefore no need to conce ourselves about its elimination. When the disease is check by early treatment, do we find that the system has ma efforts to eliminate the poison, or are we to regard t remedies we have used in the light of antidotes?

Another reason is the great success that has attended t adoption of certain therapeutic means in the prevention a cure of this disease. For instance, the use of a flannel or woollen belly-band, particularly during the night, is known to be effectual in warding off an attack. Its use, I believe, is insisted upon in the European army in this country, and the results noticed up to the present time are such as will, I am sure, lead eventually to its being universally adopted. Flannel has this good effect, simply because it is a non-conductor of electricity. I am inclined to think it would serve the purpose better were it made to cover a greater portion of the body.

Now with regard to the remedies of which their internal use in cholera has been extolled above all others by orthodox practitioners, I allude to the oil of turpentine, castor oil, spirits, sulphur and certain metallic salts, &c. I believe when absorbed into the system, the oils act as non-conductors; they prevent the further escape of electricity from the blood; alcohol increases the vital activity of the body, in other words, by the influence which it exercises upon the nervous system, it causes it to generate force which probably ere long will come to be looked upon as electric force. Sulphur is an electric. The metallic salts act chiefly by stimulating the various secreting organs to action and causing chemical changes which develop electricity. They also generate electricity themselves by the chemical changes they undergo in the body. This electricity, though gradually developed, is appropriated by the blood, and so results the restoration of the vital condition of that fluid, and recovery from a diseased to a healthy state.

Again, the character of the epidemic now prevailing considering in a hygienic point of view that many of the towns and cities under British rule in Southern India and elsewhere have, since the institution of sanitary commissions, been greatly improved, particularly of late, does not seem to me to harmonize with the received opinion as to the cause of cholera. For the present epidemic is characterized, not only by unusual severity of symptoms, rapidly terminating in collapse, but also by a persistence which has been observed not to be the case with epidemics which have occurred previously, at least for some years back, during which it is notorious that efforts such as those now made to remove sources of malaria were unknown, for the simple reason that the public then did not appreciate sanitary interference as they do at present.

Supposing it were a fact that cholera was due to poison, the observance of quarantine regulations ought to be always attended with some amount of success. Have we proofs that this is the case? To my knowledge and within the last few years the remark has been more than once made purporting the inutility of such a step in the prevention of the spread of the disease. And, again, what results I ask have followed the vigorous enforcement of measures such as those usually carried out by municipal authorities during an outbreak of it, and believed to be calculated to hold it in check? Can we conscientiously speak in positive terms of the value of these? Does it follow as a matter of course that when an outbreak has declined after the adoption of such measures that this event has been owing to any such sanitary interference. Though it is not my intention to deprecate altogether such measures, I hold, notwithstanding, that an epidemic will continue in a locality for a certain period in spite of human efforts to arrest its progress.

The occurrence of the disease rather more frequently in towns and cities bordering rivers :—my opinion is that this is owing in a great measure to an altered state of the atmosphere as regards its electricity. Few will deny, after a little reflection, that at times this must take place to a great degree in localities so situated, particularly in the tropics, considering how variable must be the extent and degree of evaporation from the surface of their waters, and consequently the condition of the air as to humidity, temperature, &c.

Professor Locke noticed on one occasion an increase in the dip and intensity of the magnetic needle upon crossing the Ohio River, and Dr. Houghton an American Geologist, found that a deflection frequently took place as he approached a large body of water.

These observations were in no way connected with any medical investigation.

It has often been noticed, indeed it seems to be the rule, that, while the disease is making its ravages along one bank of a river, the people on the opposite bank are perfectly free from it, and it is a common observation also that troops with cholera among them cease to have fresh cases soon after crossing a river, or take the disease if they had not it previously, showing that there must be some difference in the atmosphere on both sides.

The fact I have here attempted to explain is attributed by many to a contamination of the river by sewage, and consequently also the air in its neighbourhood. Were it so, how is the fact that the disease is often confined to one bank of a river to be accounted for. Could the poison not travel across as along a river ? and why it is that though the people on both sides of the river are making use of its water, those on one bank are free from the disease, whilst among those on the opposite one it is prevailing.

A word or two now on the subject of filthy localities. Medical men, I mean the majority, suppose that in these, from either a polluted state of the atmosphere, or the water in the wells containing malarious particles, the disease is more prevalent than elsewhere. Now it must be remembered, that in places where the condition is such, the population is generally greater considering the extent of area occupied ; a population perhaps consisting chiefly of lower-class people, who can scarcely be expected to be in a position to attend as much to matters conducing to the welfare of their bodies as those whose affluence permits of their taking up their abode in less objectionable localities. It is not surprising therefore that many are attacked and die in filthy places.

The mere fact that a large number are attacked ought not to be taken as testimony in favor of the theory of poison, unless it can be shown that at least a comparative freedom from the disease is observed in localities similar as regards extent and population, but free from all sources of malaria, or that the number of attacks is proportionably greater than that noticed in open situations.

Supposing in a regiment composed of a thousand men and twenty officers, the men located in an ill-ventilated and filthy barrack and the officers occupying roomy houses in the open country, that fifty of the former were attacked and only one of the latter, I ask if it would be fair to regard the circumstance as affording, as a matter of course, weight or plausibility to the idea of a concentration of the poison in the barrack. It not unfrequently happens that while the disease is prevalent in a locality recognized as healthy that the people in a filthy neighbourhood are enjoying an immunity from it. Can those who advocate the poison theory explain this, a fact which they would be disposed to regard as an anomaly ?

I am aware that over-crowding sometimes, particularly in ill-ventilated rooms, is efficacious in augmenting the fatality of cholera. I regard this as merely an auxilliary, operating when there is a comparatively small quantity of electricity in the air.

Now for the evidence considered conclusive and made use of in common with others in defence of the poison theory.

It is stated that the two women who visited the Town of Dundee while cholera was prevailing there, were attacked on their return to Arbroath as well as the six people who visited them during their illness. This seems a strong argument in favor of the prevalent view. Is it not just possible that this is an exaggerated account given to a Medical man who took it for granted and recorded it as a fact? I could cite instances where such has been in reality the case.* It seems to me that there is no practice more common among people than that of amplifying on certain facts and observations particularly in reference to cholera. They have an idea that the disease is due to poison, and they will venture any statement likely to give confirmation to that idea. Sometimes these are in direct contradiction to the truth.

Admitting even the truth of the statement, cannot we be permitted to regard this circumstance as a mere coincidence? The instances in which the converse is the case are innumerable, and if these were only taken into account they would tend considerably to modify public opinion as it now stands.

Is it not notorious that Medical men and Hospital servants who have most to do with cholera cases enjoy a wonderful immunity from the disease? Does not this fact appear at variance with the theory at present in vogue? Are washermen more liable to be attacked than others? and do observations go to show that the proclivity to be attacked is greater among those who have to do with the cleansing of drains and latrines?

As regards the instance cited sometimes for the same purpose, viz., that in which mice fed upon pieces of paper previously soaked in the discharges of cholera patients exhibited symptoms resembling those present in many cases of cholera. I have to observe that as the mice experimented upon became ill only after partaking of those pieces of paper in which decomposition had set in, the result of this experiment is far from conclusive, and favors in no way the poison theory. The explanation of the result is this;—the putrid matter in the prepared papers acted simply as an exciting cause, as putrid matters would on the human constitution. We know that putrid meat is capable of exciting a diarrhœa, which may eventually pass into cholera; and, because it does so, is it to be considered as the cause of cholera? I rather think Medical men would be loathe to admit this. It must not be forgotten also that the experiment upon the mice was performed during a cholera period, and we have testimony to the effect that the lower animals during such periods are liable to a disease not unlike cholera. The truth in this matter seems to me that the mice were simply so influenced by the cause which was operating upon the human constitution at the time, as to render them susceptible to take on disease, and this was merely excited by the prepared papers.

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* See Report of the General Board of Health on the Epidemic Cholera of 1848-49, pages 34 and 35.

Dr. Copland says that "the lower animals are subject to a disease resembling, if not identical with, cholera, and about the same time as this disease is occurring among human beings:" and in the *Lancet* for 1854, page 113, the following remarks occur, "an interesting question connected with the pathology of cholera, is that of its relation to the lower animals. Contemporaneous with the prevalence of the disease in different districts and towns of India and Europe, certain partial or distinctly localized epizooties have been observed, and believed by many to be examples of cholera in the lower animals."

In bringing to a close this paper on cholera, permit me to observe that the views therein enunciated are intended to aid investigations into the cause and nature of this disease, and it is unquestionable we have yet to learn what these really are. Should this paper ever appear before the public I trust its persual will create a desire in the minds of those who take an interest in the subject, to initiate enquiry as to whether electrical changes in the air have, as I am inclined to think, a causal relation to cholera. I state a fact when I say that the electric theory is the *only one* by which so many of the phenomena of the disease can be accounted for:—this cannot be said of the poison theory.

I am sanguine that a better acquaintance with electrical phenomena will enable us ere long to explain many more, if not all, of the peculiarities of the disease.

ART. XIV.—*On Cholera in Kurnool.* By Surgeon FRANCIS DAY, F.L.S. and F.Z.S., Medical Store-keeper, Presidency; temporarily attached to 28th M. N. I., Kurnool.

DURING the month of June 1866, a short but severe epidemic of cholera occurred amongst the Europeans in this station, a sketch of which may be interesting. Having been temporarily sent here, I have drawn up the following report mostly from the station records.

"Kurnool is situated in 15° 48′ north latitude, and 72° east longitude, upon a portion of the land formed by the junction of the Toombuddra and Hindrie rivers, elevated above the level of the sea 900 feet. It is the high road from Madras to Hydrabad, 300 miles distant from the former place, and 128 from the latter.

"The position of Kurnool with respect to the neighbouring country is low; it is bounded on the east by a low range of hills, while on the west the view is very limited—abruptly terminating at the distance of a mile or two. The appearance of the country is very bare and unprepossessing, the quantity of loose stones every where render riding and driving very unpleasant, whilst the scarcity of trees gives the whole an extremely uninteresting aspect.

"The Pettah and Fort are built on the south bank of the Toombuddra, which rises in the western ghauts, receives the Haggaree, and running eastward until it reaches Kurnool, joins with the Hindrie. The rise of the Toombuddra is very sudden, and its fall equally so. It is fordable from the end of December until the end of May, and it can be nearly always crossed in basket boats. The Hindrie is a small, rapid, serpentine river, rising very quickly and to a great height, and cutting off all communication with the opposite side. For many months it is a mere rivulet, and in places quite dry. After the fall of the river, vegetables and melons are planted in the beds of this and the Toombuddra. The climate of Kurnool is generally reckoned healthy. The mean temperature about 84°. The seasons are well marked; part of March, April, May, and June, are very hot; July variable; in August heavy rains and wind—generally westerly;—from the latter part of November till the beginning of February, it is cool and bracing—wind, principally north east. The soil is black cotton on lime stone; it is not deep, being covered with lime stone schale. The roads in the wet weather from the nature of the soil are very much cut up, almost impassable. The productions are, sugar, cotton, tobacco; also vegetables and fruits, such as carrots, turnips, onions, beet, beans, peas, brinjals, cabbages, lettuces, plantains, oranges, pine-apples, pomegranates, mangoes, and melons. Many vegetable productions of the materia medica are to be found."—(*Yearly Report for* 1852).

The population of the town was given in 1845 at 20,019, more than half being Mahomedans. It is now estimated at 30,000, but these census returns can scarcely merit more consideration than rough guesses. The district may be said to be in a state of chronic famine, such being apparently the rule not the exception, but this, it is hoped, the irrigation works will at some future day tend to dissipate.

The thermometer, as taken during the years 1853, 1855, and 1857, gives the following results:—

	Maximum.	Minimum.
January	82	74
February	85	76
March	92	73
April	95	74
May	95	87
June	89	86
July	86	82
August	84	81
September	86	83
October	86	81
November	80	74
December	79	73
Average	86·50	79

showing a mean temperature for the year of 82·50.

The rain-fall for five years from 1857 to 1861, inclusive, gives about $24\frac{1}{20}$ inches yearly, divisible as follows:—

January	0	inches.	July	$4\frac{13}{20}$	inches.
February	0	„	August	$4\frac{3}{20}$	„
March	$0\frac{3}{20}$	„	September	$4\frac{3}{20}$	„
April	$0\frac{13}{20}$	„	October	$2\frac{6}{20}$	„
May	$2\frac{6}{20}$	„	November	$1\frac{1}{20}$	„
June	$4\frac{3}{20}$	„	December	0	„

During the year 1860, there was an abnormal rain-fall of 17 inches, whilst in none of the other four years under review did it exceed 5·50 inches in any one month.

Cholera is one, if not the chief, scourge of Kurnool, and it appears to return almost every year, unless it is continuous from the preceding one. In fact, so frequent are its outbreaks, that the Civil Surgeon observed in 1861 as a remarkable fact, "both the town and district of Kurnool have been almost entirely free from epidemic diseases, only some sporadic cases of cholera having occurred."

The following are the dates, as well as I can ascertain them, from the old records, of the outbreaks of this disease in an epidemic form since 1844:—

					Deaths.
1844	commenced	Oct. 1st,	continued all the year.		630
1845	continuous from last year,		ceased in April.		
1846	commenced	in March,	„	„ October.	226
1847	?			?	?
1848	absent	...	...	... ... absent.	0
1849	commenced	April 30th,	ceased	September 28th.	501
1850	„	June 9th	„	December 23rd.	488
1851	present			?	?
1852	absent	...	...	... ... absent.	0
1853	commenced	April 24th,	ceased	November 28th.	278
1854	„	May 10th		?	?
1855	„	Oct. 23rd,	ceased	December 6th.	159
1856	„	March 4th	„	April 20th.	35
1857	absent	...	...	... ... absent.	0
1858	absent	...	...	... ... absent.	0
1859	commenced	March 22nd,	ceased	October 30th.	659
1860	„	March	„	July.	111
1861	sporadic cases			?	?
1862	commenced	June 9th,	ceased	August 23rd.	222
1863	„	Aug. 1st	„	November 12th.	114
1864	„	June 17th	„	September 1st.	186
1865	„	May 11th	„	August 31st.	83
1866	„	May 23rd	„	present.	138

The foregoing figures, although incomplete, give some idea of the virulence of this disease in the town of Kurnool, where it has only been reported as absent during four years, and in a fifth as sporadically present, from 1844 to 1866 inclusive. In three years the numbers of deaths are omitted. During 1847 and 1853 the periods of the outbreaks are not recorded. It may however be safely assumed that during the last 23 years cholera has been epidemically absent in five. That in fourteen epidemics in which the mortality has been recorded, extending over fifteen years, 3,830 persons have succumbed to it, or an average of 255 annually whilst it was present: or adding the five years when it was epidemically absent, we obtain an average of 191, or about one in every 150 of the population of Kurnool, dying yearly from this disease.

Thus in fifteen outbreaks and thirteen cessations of these epidemics they occurred as follows:—

	March.	April.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
Commenced.........	4	2	3	3	0	1	0	2	0	0
Ceased...............	0	2	0	0	1	2	2	2	2	2

Therefore from March to June this disease may, with the greatest probability, be anticipated to commence in the town of Kurnool, or during the hot dry months, especially when atmospheric disturbances are present, and any immediate alteration in the rain-fall takes place, such as in March and April when the first showers fall, in May when there is a considerable increase in the moisture, or in June coincident with the S. W. monsoon. The cessation of the epidemics may most reasonably be expected when heavy downpours occur, or in the colder months.

Causes for these outbreaks have been advanced in many ways; infection, its introduction by travellers, the overcrowding of the town during the festival of the Mahorrum, and sporadic origin, have all been adduced. But whilst each of these theories have had their advocates, they have also had their opponents. I propose giving a short summary of some of the opinions of my predecessors, or rather, since I have not been placed in civil medical charge, I should say of those Medical Officers who have been stationed here before I was sent and who were in civil medical charge of the station.

The vexed question of the infectiousness, or non-infectiousness of this disease, may now almost be considered as set at rest. There being little doubt that persons in a certain predisposed state of health may receive the germs of cholera from those who are suffering from it, by approaching too near their dejections, and probably even by contact with their clothes. At the same time it is not shown that atmospheric influences do not likewise induce this; in fact, it seems probable that in some spots in India the germs of cholera are invariably present and only require certain extraneous causes to arouse them into action ; what these causes are, it is as yet almost impossible to decide. The following is the opinion of one civil surgeon who was opposed to the theory of infection. I use the term "opposed," because I consider that he denied the disease to have been simply so spread, but believed an epidemic influence disseminated the poison. He observes, "In February 1856 diarrhœa became somewhat prevalent especially in the sepoy lines, but succumbed to mild treatment. Towards the end of the month, and the early part of March, diarrhœa increased, and many of the cases assumed a choleraic character. On the 4th of March two cases of decided cholera appeared, the first occurred a mile distant from the Fort, in a house on the opposite side of the Hindrie river. The second person attacked was a young officer living in the Fort, and a few days afterwards, the wife of the commanding officer of the 44th Regiment. No cases of cholera were reported in the Pettah until March 12th. The first person attacked in the jail was a prisoner who was under trial, and who had been in confinement about a month.

"Between the 28th March and 9th April, seven persons were attacked with the disease, of whom four recovered and three died. The epidemic was of short duration, lasting from March 4th until April 20th ; during which time 79 cases were reported, of which 35 proved fatal.

"It is worthy of remark that the places of residence of the three Europeans first attacked with the disease, were at a considerable distance (about one mile apart) from each other. There was no possibility of contagion, and at that time not a single case had occurred in the native population in or around Kurnool.

"It is also deserving of notice, that on the outbreak of the disease, the Europeans were attacked before a single case had shown itself amongst the natives of the town, and during the progress of the epidemic there were few of the European residents who did not suffer more or less from diarrhœa."

The following instance shows how the disease may be conveyed from place to place and spread by infection. In 1850, "No case of cholera had occurred in Kurnool for nearly a month, when the 15th M. N. I. who were suffering severely from it, on their march from Bangalore to Secunderabad, were halted at Chinna Tykoor, 7 miles from Kurnool (not being allowed to enter Kurnool in consequence of the sickly state of their camp). A number of the followers came into the Kurnool Bazaar and into the Regimental lines, a boy in the latter was a day or two after attacked and died, and it appeared to be a solitary case. Some days afterwards, the town being then perfectly free from the disease, a Peon who had been with the troops for some marches returned and the same day was seized with cholera and died. For a few days it confined itself to the neighbourhood of the Peon's house (situated in the bazaar near the river), it then spread taking the course of the river, and afterwards was general, some cases occurring nearly a mile and a half from the spot where it first appeared. It subsequently spread to all the villages."

In 1863 the following account is given of the advent of the disease: "Kurnool is connected with Cumbum, where the cholera first appeared, by a road in a S. E. direction, 110 miles long, which passes through Nundial. The disease seems to have travelled up to Kurnool along this road. In the middle of September the disease appeared amongst a gang of coolies working on the irrigation canal at Khaderabad, a village 5 miles S. E. of Kurnool on the above road. It appeared there, I heard, in a virulent form, and caused the coolies to disperse in every direction, many of whom, I have no doubt, came into the town of Kurnool. * * *

"Five cases of cholera occurred in the town of Kurnool in August, at distant intervals, but the disease did not prevail epidemically until it was introduced from Khaderabad."

Subsequently taking some of the foregoing suppositions as ascertained facts, the civil surgeon makes the following deductions: "that the disease travelled from Cumbum to Kurnool along the high way, in a westerly direction and in the face of a strong westerly wind. That it finally ceased at Kurnool, because there was no high road in a westerly direction." Without wishing to appear to criticize the above, I cannot but observe that there is no evidence, but only supposition, to prove that the disease travelled along the intervening 105 miles from Cumbum to Khaderabad; and, secondly, that evidence is also wanting that any of the coolies attacked in the latter place ever came into Kurnool.

The sudden and virulent outbreak at Khaderabad, may have been partially due to atmospheric causes, and so may have been that at Kurnool, for it is shown that cases were occurring at that time in the town.

The history of the epidemic of 1865 is detailed in the yearly report:—"On the 20th of April the Police reported that two bandymen from Bellary arrived at the band-stand suffering from cholera. On the 23rd April, a bazaarman who had recently returned from the Humpy fair near Bellary, where cholera was prevailing, was attacked with the disease and died on April 28th. His house was, unfortunately for others, situated in the rice bazaar, a crowded part of the town.

"On the 9th of May, twelve days after the death of the bazaarman, one inhabitant of Zorampooram (a suburb of Kurnool) died of cholera. On the 11th of May three cases of cholera were reported, and ten on the 12th, of the former all died, of the latter five died."

The following deduction was drawn from the foregoing, "that the epidemic entered the town of Kurnool from the Bellary district." But it would have been more satisfactory, had it been shown that the second case had ever been near the first, for they evidently resided a long distance apart; also records are wanting to show whether the succeeding cases were of the same class, religion, or caste, as those first attacked; and nothing is stated as to whether the epidemic broke out in one part of the town first, or in all simultaneously.

In 1845 it was observed that "it seemed to reach Kurnool from the south, gradually extending to the north and east. No village is reported to have escaped; in some the mortality nearly depopulated the locality."

But there are some epidemics in which infection is not shown, and which may have been due to some atmospheric or telluric influence. In these I include sporadic attacks and epidemics breaking out as far as can be ascertained from local causes. In 1851 "cholera first appeared in its usual place, the dirtiest part of the town, at the back of the Ameen's choultry, and spread with great rapidity to all parts of the town, the Regimental lines, however, and Nova Pettah escaped." In 1854, "on the 10th of May cholera broke out amongst the coolies on the roads in an epidemic form, and during the first 24 hours, 30 are reported to have died." But there is an objection to considering the first of these outbreaks of sporadic origin, because although the part of Kurnool mentioned deserves the character given it, still there is a large choultry for travellers, situated close to the side of a well, from which persons in that portion of the town obtain their drinking water, and filth from the former could easily flow into the latter.

Local atmospheric changes have been alluded to by several medical officers as preceding outbreaks of cholera. In 1856, "For some weeks before the appearance of the disease, the weather had been unusually oppressive and sultry for that season of the year; the thermometer at noon standing from 85° to 90° in the shade. About the 12th of April we were visited with storms of high wind, the thermometer falling to 83° at noon. From this time the epidemic began to abate, and by the 20th had entirely disappeared."

In 1859 it is stated, "Previous to the outbreak of this disease, the electrical equilibrium of the atmosphere had been greatly disturbed, evidenced by a peculiar heaviness and oppression experienced; and rising from the eastward for several evenings a succession of banks of heavy clouds, accompanied by sharp thunder and lightning, and showers of rain." * * "In June a strong wind was blowing from the west, season dry, the want of rain had been severely felt, and it was anxiously looked for. To this dryness and want of rain, public opinion chiefly attributed the prevalence of epidemic cholera, which had for some time been ravaging the station and district."

In 1862 it was observed, "Shortly before the final disappearance of cholera, there was a temporary increase for four days, from the 12th to the 15th of August, coincident with an unusual stillness and oppression of the atmosphere." This stillness and oppression of the atmosphere was also present prior to the outbreak of cholera this year, conjoined with occasional high winds, and dust storms. On the other hand, in 1855, it is stated, "I was not able to observe any particular atmospheric phenomenon, the season was much as usual, except perhaps that more rain had fallen in October."

It is only of late years that any remarks have been made in the station records on the bearing that the congregation of natives for the Mahorrum may have had in causing an outbreak of this disease. As many as 15,000 persons are estimated to flock into Kurnool for this festival. The town becomes overcrowded, and the people give themselves up to revelry day and night. They take their meals at irregular times, and their diet is often what they are not accustomed to, whilst there is great excitement which must be followed by corresponding nervous depression. However, the dates at which the various epidemics occurred, scarcely show that these causes have exercised very much influence in the production of the disease, although there can be hardly a doubt that they must augment the virulence of the epidemic when it is present; and the feast and the outbreak may occur at the same time due to the Mahorrum being in May or June. In 1864, "Cholera broke out in Kurnool on the 17th of June, the day following the close of the Mahorrum. * * * The excessive crowding of an already overcrowded town during the festival, and the filth resulting therefrom, had originated the disease. From the town the disease spread to the surrounding villages." In 1866 the epidemic again commenced after the Mahorrum.

The course taken by the disease has not always been the same. Thus, in 1845, "Its ravages were principally confined to the Pettah, although several fatal cases took place in the Fort, and in the lines of the 29th M. N. I., whilst there was not a case in the Rassala lines, or in the Jail. During its prevalence, the weather was deliciously cool, morning and evening, with a not unpleasant degree of warmth during the day, though little rain fell, and the nights were chilly. Wind East and North East, having just veered from the West at the commencement of the cold season. Average range of the thermometer 79°; an almost total want of rain this season." In July 1859, "Rain fell plentifully, and the disease ceased, suddenly it re-appeared in September, continued with increased virulence in October, and finally disappeared from the station on the 30th of that month." In 1863, "It prevailed in September and part of October, during which period rain fell, and a high westerly wind was blowing, showing that rain and wind are not sufficient to drive this disease out of a town, when other circumstances are favourable to its propagation." In several different years it was observed, that sudden exacerbations of the disease for a few days, with increased virulence in the attacks, occurred. In 1853, "The disease declined until the 28th of November (the cool weather having fairly set in) when it entirely ceased."

Before adverting to the immediate causes which have been advanced by various civil surgeons in Kurnool, to account for the outbreaks of epidemic cholera, it may not be amiss to suggest, whether the presence of filth can, amongst some classes, be assumed to be the cause of this disease locating itself in spots where they reside? Is it not possible that half measures in sanitary matters are a mistake? Can we not suppose that people bred up from their infancy in filth, and luxuriating in intemperance, might become more predisposed to attacks were they to suddenly change their modes of living, and to reside in a semi-clean town? Records from our improved modern Jails in India might furnish some useful information on this head.

I here give a synopsis from an interesting account left by the last civil surgeon of this place, and whose loss appears to be much felt by the inhabitants. It has reference to a visit he paid to one of the villages near Kurnool, situated on the S. E. bank of the Hindrie river. It is divided into three portions, the largest of which is occupied by Chucklers, the next by Malas and Pariahs, and the remainder by Basket makers. All agree more or less in their habits, except that the latter class are temperate, and do not eat the flesh of animals which have died of disease. The Chucklers, Malas, and Pariahs, are to a man drunk after 4 P.M., daily: they partake freely of the flesh of animals which die of disease, obtaining such about once a week, only rejecting such as have been poisoned, or died from snake bites or scorpion stings. After cooking, they insert a red hot sickle into it, leaving it there until cold, under the belief that such a proceeding destroys all deleterious effects. They deny being subject to diarrhœa, or any other bowel affections, and stated that only three persons died of cholera during the late epidemic visitation (1864) in the chucklers' portion of the village, where they number 200 souls. They pride themselves on drunkenness, and train up their children to follow that mode of life. They wash themselves once in two months, the floors of their huts once a week, and chunam the walls yearly. The village was found to be filthy, but, in spite of all this, to them it seems to be a healthy abode.

During my late journey from Cuddapah to Kurnool, the difficulty of procuring bullocks, usually led to my being compelled to proceed personally into the villages, to argue with the native authorities, and persuade them to furnish me with fresh cattle. During these visits, the effluvia at night time was overpowering, reminding one of a dysenteric sick room in which all the windows and doors had been kept closed for twenty-four hours. Mud in the roads mixed with offal was nearly ankle deep. On the occurrence of cholera, these villages become such hot-beds of it, that an immediate flight from the infected locality is generally said to be the only effectual way of escaping the disease. But these people do not indulge as the classes just adverted to.

As regards the local causes of the disease, in 1851, it was stated, that "Kurnool, with its narrow and dirty lanes, crowded houses, dense population, and deficient sanitary regulations, is most favourably situated, both to originate any epidemic disease, and when originated, to retain it." In 1845, it was observed, that, "In consequence of the famine, inferior cholum which had been preserved under the ground for several years, was being sold at immoderate prices, and that such kept up the disease." During the Mahorrum in 1863, it was brought to notice that, "The toddy sellers collect as much toddy as possible for two or three days immediately preceding the close of the Mahorrum, in order to sell it at a higher price on the last day of the festival to the thousands which resort to the toddy-shops. They seat themselves under a burning sun, in the open air, and drink freely of this decomposing fluid; at the same time they consume great quantities of coarse curry, made from the entrails of cows, and sheep, and half rotten mangoes." The odour issuing from the dregs of oil seeds, were also pronounced prejudicial to health, and the manufactory was proposed to be removed to a distance from Kurnool.

It is, says Dr. Keess, a popular belief in Kurnool that during the prevalence of cholera, the common kites, *Milvus Govinda,* absent themselves until the disease leaves the station. The same phenomenon has been observed elsewhere; thus in the *Levant Herald* for September 6th, 1865, it was observed that at Constantinople "the birds of every kind, from the sparrow to the sea gull and kite, absolutely disappeared from the capital within a week after the outbreak of the disease, but after it had ceased all reappeared."

The dissemination of the disease, after it has once commenced, no doubt occurs in various ways. Exclusive of epidemic, and immediately infectious modes, there are others apparently acting in a secondary manner. Here I will commence by making a synopsis of a letter from the late Assistant Surgeon W. R., which is especially interesting, but for the purpose of obtaining his information he appears to have passed June 26th, 1866, whilst cholera was present in the town, inspecting the nuisances of Kurnool; his wife was attacked the next day with cholera, but recovered. During the succeeding 24 hours he also had the disease from the effects of which he died.(1)

Of the privies in the native part of the town not one was clean, the stench from some so great as to prevent entrance. One large one was situated close to and above the well which supplied most of the town with water. Some natives allowed buffaloes and donkeys to act as scavengers in their privies: in all the larger ones he observed several individuals of each species feeding off fæcal matter, in one a buffaloe licking up a diarrhœa stool. He observed that "the beast would most probably next put its mouth into some vessel or tank containing water for drinking purposes, and in the evening would be allowed to go into the yard attached to the hut of its owner, carrying there on it hoofs a quantity of filth enough to breed any pestilence." A square in the very heart of the town was occupied by above 500 buffaloes, whilst the butchers were washing tripe in front of their stalls!

The extent to which lower animals can disseminate this disease, deserves particular attention; for where the rule—not the exception,—is for human beings to go into the streets, alleys, and compounds for the purposes of nature, or even if they have privies, such being open to lower animals, it must follow that the excretions of some at least of those who are suffering from cholera or choleraic diarrhœa during epidemics of this disease, are present in the public thoroughfares. Assuming, as I believe one is bound to do, that cholera is infectious, especially from the excretions of those suffering from the disease, either in the slightest or most intense degree, it may, or I might say, must, follow that lower animals extend the disease by carrying the principles of infection about on their hoofs; or after having lain down on the ground where dejections have been passed, subsequently taking portions away to other places. It is true that we are at present hardly in a position to assert that lower animals are affected by this disease, or that it could be spread by eating their flesh after they have indulged in repasts of choleraic dejections, should the meat in cooking have been subjected to a temperature of 212° Fah.; still one could not recommend it for human food.

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(1). Under the *new Medical regulations*, is it a fact that widows of Assistant Surgeons only obtain pensions of £ 25 a year?

Buffaloes in Kurnool appear to do the duty of pigs in Hindu towns, and have long been its recognized scavengers;—thus, in 1863 it was stated, "the prisoners are taken twice a day to a ditch, at a short distance from the jail, for the purposes of nature. The ditch is soon after cleared of every vestige of filth by buffaloes, which are the chief scavengers of the town." Imagine milk from such creatures being used as food. Even in the best of times horse-manure is given them to eat! The early riser in Kurnool, if he keeps his eyes open, must observe that the lower classes of Mahomedan females, go into the public roads for the purposes of nature, and the buffaloes perambulate the thoroughfares at dawn to collect this food, which they seem to relish! Tastes differ, but the donkeys agree with the buffaloes, in eating such when procurable!

The year 1866 has formed no exception to the usual rule of the prevalence of cholera in the station during the hot dry months, but before entering into any description of the epidemic, I will give the police returns of the number of persons attacked and the deaths. These figures, however, must not be considered correct, but only approximating to correctness.

From May 23rd to 25th, 1866: number attacked, 4; died, 4.

„	„ 26th	to June 1st	„	„	„	22	„	11
„	June 2nd	„ 8th	„	„	„	15	„	3
„	„ 9th	„ 15th	„	„	„	28	„	7
„	„ 16th	„ 22nd	„	„	„	34	„	17
„	„ 23rd	„ 29th	„	„	„	109	„	45
„	„ 30th	to July 6th	„	„	„	42	„	18
„	July 7th	„ 13th	„	„	„	11	„	6
„	„ 14th	„ 20th	„	„	„	2	„	0
„	„ 21st	„ 27th	„	„	„	5	„	5
„	„ 28th	to Aug. 3rd	„	„	„	0	„	0
„	Aug. 4th	„ 10th	„	„	„	3	„	3
„	„ 11th	„ 17th	„	„	„	0	„	0
„	„ 18th	„ 24th	„	„	„	2	„	1
„	„ 25th	„ 31st	„	„	„	8	„	4

From Sept. 1st	to Sept. 7th 1866;	number attacked,	2;	died,	1
„ „ 8th	„ 14th „	„ „	5	„	2
„ „ 15th	„ 21st „	„ „	8	„	7
„ „ 22nd	„ 28th „	„ „	4	„	2
„ „ 29th	Oct. 4th „	„ „	2	„	2
			Total...306	......	138

How the epidemic originated? whether infection could or could not be satisfactorily traced? whether it occurred from atmospheric or telluric causes? or was merely consequent on the overcrowding, and dissipation of the Mahorrum, after which festival it commenced, I have no means of correctly ascertaining, so omit all surmises. Still a few remarks are here necessary, because it has been strongly asserted, that the epidemic was due to the Mahorrum. It can scarcely be conceived, that such would induce it, excepting that it causes a number of persons to flock into Kurnool, many of whom may come from districts in which this disease is in existence and may thus bring it into the town with them. After the feast the dissipation is no doubt followed by nervous depression, rendering them more liable to attacks of epidemic disease. Overcrowding also increases filth, and in Mahomedan towns, when there are many strangers, few respectable mussalman women will go outside their compounds for the purposes of nature, thus the filth becomes concentrated, and the bad effects of this is still further augmented, by the high stone walls around the houses, which impede the free circulation of air, and in the hot weather by absorbing the heat in the day time render the atmosphere still more oppressive than it would otherwise be. But if we turn to figures, and examine this question by reference to dates, we find that when the Mahorrum occurs in the hot months of the year, it may be coincident with an outbreak of cholera, and from this we may also fairly conclude, that it is probably one of the causes of its development and dissemination. In the last three years, the Mahorrum and the cholera have occurred as follows:—

1864	Mahorrum,	June 7th,	Cholera,	June 17th.
1865	„	May 27th	„	May 11th.
1866	„	„ 17th	„	„ 23rd.

In 1865, the epidemic is said to have been brought in from the Bellary district; any how, it was in full virulence before the Mahorrum. In 1864 and 1866 it broke out commensurate with the termination of that feast. It cannot but be admitted, that these coincidences are remarkable; but if we turn back to the dates of the previous outbreaks, and those of the Mahorrum, the coincidence vanishes: thus in 1844, feast January 23rd, epidemic October 1st; 1846, feast January 2nd, epidemic March; 1849, feast November 17th, epidemic April 30th; 1850, feast November 6th, epidemic June 9th; 1853, feast October 5th, epidemic April; 1854, feast September 24th, epidemic May; 1855, feast September 14th, epidemic October; 1856, feast September 2nd, epidemic March; 1859, feast August 2nd, epidemic March; 1860, feast July 20th, epidemic March; 1862, feast July 2nd, epidemic June; 1863, feast June 21st, epidemic August.

In 1866, the epidemic at first confined itself to the native inhabitants of the Pettah and Fort. Only one sepoy was attacked and he recovered, and one European Officer died of cholera shortly after his return in June from districts infected by it. On June 23rd, the disease suddenly commenced in the Regimental lines, one sepoy was attacked and died, the next day a second was admitted into hospital with it, and the epidemic still further spread itself to the servants of the European Inhabitants, who, until then, had remained free; it also showed itself amongst the mounted police. On the 27th it invaded the Europeans, and so severely, that seven were attacked within four days, four of whom died.

There was nothing particular to observe regarding the attack in the lines, which are situated upon a slightly rising piece of ground, nearly midway between the rivers Toomboodra and Hindrie, and to the west of the Fort, from which they are divided by the parade ground. I should mention that the wall at this spot has been partially levelled. As a rule, the lines appear to have been remarkably free from this disease, considering how it has scourged the inhabitants of the town. During this epidemic, five sepoys were attacked, one on each of the following days: June 7th 23rd, 24th, 27th and 28th, the second and fourth died, the other three recovered.

The peculiar stillness of the atmosphere during the day time, and the dust storms towards evening, which occurred prior to this outbreak, I have already alluded to. Otherwise the only peculiarity was a sudden fresh in the Toomboodra river. No rain fell.

As far as I can ascertain, ten servants or members of their families residing in the houses of Europeans, were attacked between June 24th and June 30th, five died and five recovered. It is a remarkable fact, that with one exception, these servants belonged to masters who were not subsequently attacked; in the solitary exception, three persons in the house had cholera, two of them died, but Mr. T. recovered; also in a second instance, one of the European victims had been engaged the day before he was himself attacked in treating two cases of choleraic diarrhœa in servants at his next door neighbour's with chlorodyne. The Assistant Surgeon, as already remarked, no doubt contracted his attack whilst in the execution of his duty, and he also most probably infected his wife, by means of his clothes.

During June, the number of Europeans residing in Kurnool was as follows:—13 adult males, 10 adult females, and 13 children. Out of these 7 adult males were attacked, or upwards of 53 per cent., of whom 71 per cent. died. Of the females, 1 or 10 per cent. were attacked, none died. The children were entirely exempt.

For the sake of convenience and explanation, the houses of the Europeans may be divided into those within the Fort, and those in the Midan, or open space, covering much of the ground between the rivers Toomboodra and Hindrie (excluding the Fort, Pettah, and Regimental lines) and having the irrigation canal running across its base.

The houses within the Fort must be subdivided into two portions, first those on its river face, extending about half a mile along its south bank, and immediately facing the stream. They are six in number, all inhabited by Europeans; four being up-storied, two (Nos. 4 and 6) single storied, these last two being divided from the river wall of the Fort by a narrow public road. The up-storied houses, built upon the walls of the Fort, are of substantial stone. The roofs of all are flat. The attacks of cholera or choleraic diarrhœa were as follows in the different houses. No. 1 free: No. 2, one European attacked June 30th and recovered, one native Butler, his wife and child attacked, the last two died, one on June 29th, the other on the 30th: No. 3, a house servant attacked on June 27th and died: No. 4, no attacks: No. 5, one servant attacked and recovered: No. 6, no attacks. Consequently, along the river face of the Fort, out of six houses inhabited by 8 adult Europeans and 4 children, 1 adult European had choleraic diarrhœa, 5 native servants or members of their families were attacked, and 3 died. But I should also add that amongst the remaining adult Europeans only 2 escaped diarrhœa to a greater or lesser extent during the progress of the epidemic, and in some this was conjoined with vomiting. It is certainly remarkable that these houses escaped so lightly, that the only European attacked in them recovered, whilst the cases of diarrhœa did not assume a choleraic type. It is true that a second case occurred in house No. 5, at least was treated there, but the officer, although passing most of his day time there, invariably resided in another bungalow within the Fort, away from the river. His attack may, therefore, be fairly attributed to his own house, but may not his recovery be due to the locality where he was treated?

The houses within the Fort, (as distinct from those upon its river face) and which were inhabited, also lie very close together, and are surrounded by those of the native residents. Nothing is particularly worthy of note respecting them; all are single storied. In one an officer already referred to, was attacked on June 28th, and recovered, whilst not far removed was the house of Assistant Surgeon W. R., whose wife had been attacked on the 27th, but recovered, he was next a patient on the 28th, and died on July 1st. Here I cannot but observe upon the certainty with which infection can be traced, although the epidemic was then in the town. It is almost clear that in the zealous and energetic discharge of his duties he went to places where the elements of infection were present, and as he has so well described how lower animals can carry it away on their feet, it seems more than probable he furnished an example of how human beings going into foul privies can also disseminate the disease. On the next day his wife was attacked; the day after himself. All records about the servants in those houses are wanting. Of three officers one died, the other two went away sick.

In the Midan, I include those houses which have already been stated to occupy an open space situated between the rivers Toomboodra and Hindrie, and having the irrigation canal along its base; the soil is black cotton, rarely if ever above ten inches in depth, and overlying a slaty limestone, the same as exists elsewhere. Its extent is about one quarter of a mile in width, and half a mile in length, and out of seven houses only two entirely escaped. The cholera line—

if I may so express it—commenced near to the base of this piece of country, at house No. 1, where on June 24th a native servant was attacked and died: No. 2 escaped: in No. 3 the Officer died at the commencement of June: in No. 4 the owner was attacked on June 30th and died the next day: in No. 5 two servants were attacked on June 26th and recovered, they were attended by Mr. G., who, himself contracted the disease on the 27th and died on the 28th. Passing from house No. 4 there are two others leading down to the Hindrie river, the first entirely escaped, in the other the owner was attacked and died. Three other houses along the banks of the Hindrie were also inhabited by Europeans, two on its northern, and one on its southern, side; in none were any of the Europeans attacked, but in No. 2 on the north side 2 servants were attacked on June 27th and July 2nd, but both recovered, and one servant in the house on the south bank, who died. Few, if any, of the Europeans escaped simple diarrhœa at this period.

Omitting the first case of the Officer, which occurred in the Midan prior to the virulent outbreak amongst the Europeans, we come to the examination of those who were first attacked. It appears that Mr. G. had passed the day prior to his contracting the disease, in treating two cases of choleraic diarrhœa, in a house (No. 5), where he was himself attacked, and that so suddenly that he could not be removed to his own residence. I cannot trace any communication from one case to another after the first few, and in one instance a patient vomited over the beard of another European who was attending him, but the latter did not contract the disease.

This sudden outbreak amongst the European community,—as virulent as it was short,—has not been of infrequent occurrence in Kurnool during these epidemics. It can scarcely be entirely due to infection, and is most probably assisted by some atmospheric cause, and if we turn to the general mortality at this period in the town, we observe, that although the relative mortality to attacks did not augment, the number of attacks more than trebled in the week, and as suddenly sank the week after. In fact the same causes which were acting upon the Europeans were also in existence amongst the natives(1) in the Bazaar.

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(1) It is a great mistake that the mortality returns of Kurnool are added up without any division between the Hindus, Mahomedans, East Indians, and Europeans.

It is scarcely worth while to enter here upon the treati adopted. The natives do not believe in the European d and rarely apply for advice until just about expiring. civil surgeon remarks, "there have never been more two cases of cholera at a time treated in the Civil Di sary." The natives trust to cold water and starvatio several days after the disease has passed off. Do the quicker or in a larger proportion than those treated ?

The question of precautionary measures which shou adopted in Kurnool opens a wide field for discussion requires that before advancing his theories a person sl have lived some time in the place, and closely studie manners and customs of the people. Not having this, and having been absent during epidemics, I can give opinions suggested by the various civil surgeons have been here, on the result of a short observation o place.

Acting on the belief that the disease, although a pheric or epidemic, is also infectious, which infection be spread by human beings or the lower animals, I suggest whether some of the following observations not deserve attention.

Amongst the pests of the town are buffaloes and don met at every turning, poking their noses in at every they seem ubiquitous. Municipal taxes are extend cows, but these other four footed creatures escape ; s they are as fit objects of taxation as cows. Again a p for stray cattle appears to be unknown, one is urg necessary, and not only so, but stray animals should b mediately pounded. Whilst cholera is about, no me could be too rigorous to prevent their disseminati through the place ;—even dogs should be tied up

The water supply should claim especial attention. wells near privies should be closed ; and *should the i tion channels contain water during the next epidemic* should be well looked after, for they flow through the at the sides of the public roads and, besides being us drinking purposes, are also used for ablution. Not only s they be securely covered over except in certain place no penalty could be too severe for those who commi sances near where they flow. Fæcal evacuations from cl patients spread the disease, may not urine do so also ?

beetles, and many insects may after settling in choleraic dejections, also probably carry it to other situations. The Police must be much improved before they can be expected to assist in preventing public nuisances.

The question of public privies in these seasons deserves especial attention, whilst the dry conservancy system should without any doubt be carried out. Dejections of all cholera patients should be buried or rendered innocuous, and care be taken to keep the healthy as much as possible away from the sick.

As regards the Mahorrum, it would probably be impossible, as has been suggested, to prevent the great influx of visitors to this feast, but Police regulations strictly carried out might obviate much of the mischief. Extra sweepers should be kept to clear away all accumulations of filth. All tom-tom beating and processions should be interdicted between 10 P. M. and sunrise the next day. A strict supervision should be kept over the liquor and food sold, and all who mixed adulterations (as stramonium) with the former for the purpose of causing excitement should be heavily fined.

Segregation of human beings in a country like this can hardly be carried out; quarantine regulations between villages could scarcely be successful, but the segregation of lower animals is not only possible but easy. Let the local Civil and Military authorities earnestly co-operate with the Medical Officer, and no doubt much of the mischief may be prevented or at least mitigated.

Many regulations in addition to those here indicated are necessary in this town, which, however, is immeasurably cleaner than the villages in the District. Its drainage especially requires great improvement. But I leave it to those who have resided longer in Kurnool than I have to point out the various desiderata, for, as I explained at the opening of this paper, I am scarcely more than a stranger in the place.

PART II.

REVIEWS AND NOTICES OF BOOKS.

Hand-book of the Indian Flora; being a guide to all the flowering plants hitherto described as indigenous to the continent of India. By Lieut.-Col. HEBER DRURY, Author of "*The Useful Plants of India.*"—2 vols. Travancore Sirkar Press, 1864—1866.

The Treasury of Botany. A Popular Dictionary of the Vegetable Kingdom; with which is incorporated a Glossary of Botanical Terms. Edited by JOHN LINDLEY, P.D., F.R.S., F.L.S., &c. &c., and THOMAS MOORE, F.L.S., Curator of the Chelsea Botanic Garden, &c. &c. London: LONGMANS, GREEN AND CO.—2 vols. 1866.

OWING to various causes, the science of Botany, once so zealously and lovingly cultivated in India, has fallen into a strange neglect, and we are afraid that this decadence is only a reflection of the low estate it has reached in the mother-country.

Not very long ago it was thought that the education of a medical man was incomplete without a fair knowledge of the vegetable kingdom, combined with a fair knowledge of Latin and Greek; but, to-day, it appears that both Classics and Botany are alike neglected, the reason being, in the first place, that scholarship and the science whose decline we bewail, have a very small immediate market value.

In our own student-days Botany was taught for three months during the summer, three lectures, of an hour each, being delivered in each week, to the smallest of classes, and during this short session of thirty-six lectures, the students imbibed so much, or so little, as they thought proper of the science.

Only one examining board required Botany, *The Hall*, and at *The Hall* no man was ever plucked for Botany, or rather for ignorance of it; so then *cui bono* Botany when there was such a host of other subjects to take up?

At the private classes in London a botanical *séance* was held on each evening preceding the *Hall* examinations, when the Grinder drew attention to a bouquet of unfamiliar looking flowers placed in a cracked tumbler on the table at which the students sat.

By a remarkable coincidence a similar bouquet was to be seen at the *Hall* at the succeeding examination, when the prescience of the Grinder was rewarded by the most charming results, his pupils passing through the plant ordeal brilliantly.

So, Botany claimed about as much attention at the hands of students, during their curriculum, as did the anatomy of the internal ear, concerning which it was said that no man had been known to get this special part at the College of Surgeons within the memory of man, save one unfortunate, who, having been rejected on account of failure in the ear, promptly blew out his own brains in Lincoln's Inn Fields and covered the Board of Examiners with confusion and remorse. It was said that at one of the collegiate banquets succeeding this tragedy, the Examiners registered a tremendous oath never again to pluck a man on the internal ear, and on this account the *malleus*, *incus* and the *stapes* came to be treated with utter indifference, not to say contempt, at the various schools.

It is said that more men are rejected at the University of London examinations on the score of ignorance of Botany and Natural History generally than for any other cause. This at least ought to bring back Botany from the limbo of neglect it has fallen into, so far as the Alumni of that University are concerned, those pale consumers of the midnight oil, those swillers of green tea, those encyclopædias of learning, who, if they do not, as a rule, stand in the very first rank of successful practitioners, ought and deserve to do so.

Botany, except in the above instance, does not commend itself to the student as a study of necessity, hence one reason for its present neglect, the art being a strictly utilitarian one, but why, we would ask, has it fallen into disfavour as a study of love, as a recreation and a most agreeable mental discipline?

Perhaps it is because the microscope, with animal histology, and organic chemistry, and ophthalmoscopes, and rhinoscopes, and laryngoscopes have elbowed it out of the way; perhaps because the Latin and Greek words are difficult to understand and irksome to remember; perhaps it is because the students seem to notice that the night bell and knocker of the Botany Professor's door bear but few signs of being much used,—an he be a doctor,—and, again, perhaps it is because the student has really too much to do during his school career to allow of the study of Botany at all.

Our remedy for this would be to make students take up Botany with Chemistry at a preliminary examination, prior to their commencing attendance at Anatomy or Physiology at all.

Through many causes then it falls out that Doctors start on their various careers, now-a-days, with very little Botany in their knowledge boxes, and those who cast their lot in India are no exception to this general rule.

The small number of the latter class, who do cultivate Botany, take it up after their arrival in India as a rule, teach themselves the science, and taste a new and rare pleasure, where our pleasures are few and are sadly and soberly indulged in.

The reasons for so few of the Indian Medical Service making a special study of the structure and classification of the Flora around them, are, we believe, firstly, the fact that books on the Indian Flora are rare and expensive; again, that improved communications have put an end to the easy, slow saunter through the country that marked the young Assistant Surgeon's progress from station to station a few years ago, when the varying features of the plants by the way-side, almost of necessity, arrested his attention; and thirdly, that this kind of knowledge has no substantial charms to render its cultivation directly or indirectly lucrative.

With regard to the first prohibitive reason, the scarcity and costliness of books treating of the Indian vegetable kingdom, Colonel Heber Drury has done his best to cause this to disappear.

In 1864, the first volume of his "*Hand-book of the Indian Flora, being a guide to all the Flowering Plants hitherto described as indigenous to the continent of India,*" was issued from the Travancore Sirkar Press, and during the present year it has been succeeded by a second volume, plain homely-looking tomes, owing nothing to the printer's art, but intrinsically excellent and useful exceedingly.

The work is, of course, a compilation, and such a compilation as was urgently required, drawing its materials from upwards of sixty different sources, some of which are only to be found on the shelves of the wealthy and luxurious votaries of science, and some not procurable even by the most diligent and prodigal of Book-Hunters.

In the first volume Colonel Drury's labours were much lightened by the precious fragment, volume 1st of Wight and Arnott's Prodromus, being ready to his hand, which carries the reader pleasantly and profitably to the 83rd order—*Dipsaceæ.* The 1st volume now before us (Drury) ends similarly with *Dipsaceæ,* and, besides containing notices of all the plants nominated in his bond (between Ranunculaceæ and the above mentioned order), it furnishes an admirably clear and simple glossary of Botanical terms used in the work, and indices of synonyms in the Tamil, Malayalim, Telugu, and Hindoostanee and Bengalee languages, besides a general index of names.

If Botany is ever to be made a popular science in India, we hold that it must be rendered so by the publication of vernacular indices of local Floras. This method of acquiring Botany was despised by such giants as Wallich and Carey, the latter of them said of the supposed native names given to De Candolle and Jussieu by Leschenault, along with the specimens collected by him in the southern parts of the Peninsula: "they are, in general, a mere burlesque on names, "meaning often that the natives *had no name for the "plant, or did not know it:* in other instances, it appears "to have been not the name of the plant, but the name "of the village near which it was found, which had been "marked down." Which last shows that Leschenault must have been very ignorant of the language of the district he was operating in, but is no argument against vernacular indices in general, so long as the native nomenclature can be checked by the collector's knowledge, however slight, of the vernacular of the locality.

For our own part we feel under great obligations to these native names of plants, they led us to commence the study of Botany, and, though they often led us wrong as we groped through the portals of the science, still the act of correction of the blunders helped us on our way.

It is provoking to find that a score of plants *Asclepiadiaceæ* and *Euphorbiaceæ* are known by the common convenient name of *Doodhee,* but a very slight knowledge of Hindustani suffices to show us that that name has reference solely to the *Doodh,* the milky juice with which such plants abound.

To the beginner the assistance given by native names is very great, to others than beginners this aid may be a matter of indifference, but we think most Indian Botanists, as we said above, begin in India.

This Col. Drury says of himself in the dedication of his "*Useful Plants of India*" to General Cullen, and this too is said of Voight, the author of the *Hortus Suburbanus Calcuttensis,* whom fortune led to the splendid botanical garden of Serampore, the work of Dr. Carey's long and useful life-time.

Let all lovers of plants, we say, draw up vernacular indices of the Flora of their particular scene of operations, they will by the publication of these do genuine service to Botany, they will render easy the labours of their successors, and they may even induce natives to acquire and cultivate the science.

The Rev. Mr. Gell, in the preface to his useful little "*Hand-Book, or Catalogue of native names of trees and plants in the jungles of Western India,*" says "By natives of India alone can Botanical science be pursued in India with the same success which has attended the efforts in this direction of Europeans in Europe. Few of us have the leisure, fewer still the mental and bodily qualifications which must be combined, before the Botany of India is mastered. By 9 or 10 o'clock in the day, when an English Botanist is just warming to his day's work, the Anglo-Indian sinks in unconquerable langour, even if dim sight and reeling brain do not warn him to desist from further exposure to a sun which is stronger than he." Field Botany in India is trying indeed, but not more so than Shikar. Now Sportsmen count by the thousand, but Botanists only by the tens, we are afraid.

Dim sight and reeling brain do not affect us much, as we splash through the rushes in pursuit of *Gallinago Scolopacinus,* then why should they do so as we peer through the gloom of thicket and forest for flower and fruit and leaf?

The fact is that the best time for the Botanist is in and immediately after the rains, when malaria at his feet and Dan Phœbus above his head are in the glow and fierceness of their malignant strength.

The Botanist who jots down native names for plants will often be struck with the evidence of the close and excellent powers of observation of natives, as displayed by their grouping together, plants that at first sight seem very dissimilar.

Thus there is nothing striking to a casual observer in the appearances of the two plants *Evolvulus Alsinoides* and *Cressa Cretica;* they are found often close together in the same kind of soil; they bloom at the same season, and examination shows us that they both belong to the natural order *Convolvulaceæ.* But in the North-west Provinces their relationship is recognized by the natives who call the first *Chotee* and the second *Burree Sunkahoolee.* This is but a solitary instance of the diagnostic instinct we have had occasion to notice and wonder at in natives scores of times.

The notices of plants in Col. Drury's two volumes are brief to baldness, but his field is immense and his space is scant, *ars longa, vita brevis est,* and, had he emulated the copiousness of old Roxburgh, his volumes might have counted by the dozen, whereas we believe that his task will be ended in the completion of his 3rd volume, soon, we hope, to appear.

His method is excellent, each plant being described under three or four heads. Firstly, we find the ORDER briefly and clearly described. Then the GENUS, with its classification according to the Linnæan system. Then the derivations are given (for which we must all thank him, they being often amazingly remote and far-fetched). Then come the general characters of the GENUS.

Now come the VARIETIES, each one under four heads; its identification, with the page and volume of the authority cited; the engravings extant that illustrate it; its specific characters; its habit at and season of flowering.

We said above that the first volume concluded with *Dipsa-*

ceæ. Vol. II. begins with the 88th order or *Compositæ*, and ends with the 124th order or *Plantaginaceæ.*

In the compilation of this second volume Col. Drury had no Wight and Arnott's Prodromus to assist him, and he confesses that the 36 natural orders comprised in the volume have required a far greater amount of labour than the first volume called for.

Roxburgh, Wallich, Rheede, Graham, Wight's Icones, Dalzell, Hooker, and others have been largely drawn upon in this second volume, and the product is most valuable, more so perhaps than the first volume, which the *Prodromus* had forestalled.

This second volume, like the first, concludes with the vernacular indices we so especially thank the author for giving us.

Nearly one hundred pages are devoted to *Acanthaceæ.* Let us dip into them, and take out one variety, to show the reader the author's method.

Genus xxxiii. ASTERACANTHA.

Didynamia Angiosperma, Sex. Syst.

Deriv.—Nom. *Aster*, a star, and *Acanthus*, a spine; alluding to the whorl of spines round the flowers.

After an enumeration of the general characters, he takes us to the variety :—

"(1) A. LONGIFOLIA. (*Nees.*)

"*Ident.* N. ab. E. in Wall. Plant. As. Rar. III. p. 90, Dec. Prod. xi. p. 247.

"*Syn.* Barleria Longifolia, *Linn.* Ruellia Longifolia, *Roxb.*

"*Engrav.* Wight's Icones, t. 449, Rheede Mal. ii. t. 45.

"SPEC. CHAR. Herbaceous, erect: stem quadrangular leaves lanceolate, attenuated at both ends, serrulate, ciliated flowers sessile in the axils, verticilled, blue, surrounded b rigid spines.

"In swampy places, very common, flowering in the rain season."

There are only two things essentially wanting in thi description, and these may be found in the author's "Usefu Plants of India"—which every one of our readers *ought t* have on his shelves if he have it not already,—we allude t the vernacular name, and the use of the plant.

In concluding our notice of these two volumes of "*The Hand-book of the Indian Flora,*" we must not do so without giving them our unqualified praise, and with the expression, not only of our gratitude to the author, whose task has been one of immense labour, but also of our pleasure and pride that Madras still appears, as she has ever done, in the van of Indian Botanists. Madras, though shockingly behind the world, in that it has stood aloof from the amazing commercial rascality that has prevailed in her more busy sister Presidencies, is wide awake to the interests of science, and can boast of more æsthetically noble reclamations than those of Back Bays and its kindred burst-up bubbles.

The second work on our list is a new development of the excellent "Maunder," whose neat and handy little volumes are as popular generally as the famous Churchill series of manuals are in the Medical profession.

The Treasury of Botany, in its progress from A. AARON'S BEARD, *Hypericum Calycinum,* to Z. ZYGOSTIGMA, occupies 1254 pages, double columned, in small legible type, divided into two volumes, profusely illustrated, and is one of the prettiest little hand-books ever issued from the London Press.

This work had originally been undertaken by the late Dr. Lindley, Emeritus Professor of Botany in University College, London; and the well-known author of "The Vegetable Kingdom," but, owing to his protracted illness, and much to be lamented death, the book passed out of his hands when the letter C had been reached, and thenceforward was conducted to its conclusion by Mr. T. Moore, Curator of the Chelsea Botanic Garden, as Editor, assisted by a staff comprising some of the most honored names in Botany, such as those of Professor Balfour, Dr. Seeman, Mr. J. T. Syme, and the Rev. M. J. Berkeley.

The initials of each member of the editorial staff are appended to the several articles, and when no initials are found, it is to be concluded that the article is by the editor, Mr. T. Moore, himself.

It is profusely illustrated with woodcuts by Fitch, the illustrator of Bentham's English Flora,—as familiar a name to Botanical students as is that of Bagg to readers of Churchill's Manuals,—and by series of steel engravings, which, although very pretty, might have been left out without disadvantage, whilst their absence might have cheapened the book.

Thus plate 18, representing the Hyphæne or Doum Palm in Upper Egypt, was scarcely required, seeing that the characters of the tree were already most plainly figured in a wood-cut on the opposite page.

The share of steel-plates that falls to India is confined to plate 1, which represents Epiphytal Rhododendrons of the Himalayah, typified in *Rhododendron Dalhousie*, whose introduction into England was owing to the labours of J. D. Hooker.

It is described as "a slender straggling shrub, six to eight "feet high, with oblong leaves, and white bell-shaped fra-"grant flowers, with a delicate rosy tinge. It is generally "growing, like many tropical orchids, amongst moss, with "Ferns and Aroideæ, upon the limbs of large trees, at from "6,000 to 9,000 feet above the sea, in a region of fogs, "moisture and rain, in sight of the snow-capped peaks of "the Himalayahs."

Another plate (No. 12) represents the vegetation of the Cinchona Forests of Peru, with Palms and Tree Ferns, and affords a peep of delicious scenery in the valley of San Juan del Oro, deep amongst the spurs of the Cordillera, that were once famous for their gold-washing. In these lovely Caravayan valleys, at an altitude of 5,000 feet above sea level, Mr. Clement Markham made that collection of Cinchona plants that was destined to clothe our Nilghiri Hills with a new and unspeakably valuable Flora, and to rescue the Quinine-bearing Cinchonaceæ from the destruction wrought by the reckless and improvident greed of ignorant Cascarilleros.

In the forests of Bolivia and Peru the Cinchona trees, growing in groups and clusters, are almost unapproachable owing to the extraordinary denseness of the protecting jungle. The experienced eye of the Cascarillero detects his prize from afar off, owing to a peculiar movement of its leaves, and by the colour of the masses of bloom, and after struggling through the intervening masses of jungle he fells the giant of the forest, and stripping off the bark nearest to his hand proceeds to look out for another victim.

In this process the trees are necessarily at once destroyed, when by pruning any quantity of bark could be obtained, and the tree be left vigorous and capable of many subsequent spoliations; and thus it was that there seemed to be a chance of Cinchona passing away in process of time, and ourselves being left forlorn and quinine-less. Thanks, however, to Lord Dalhousie, to Markham, and especially to Mr. MacIvor, the able guardian of the bark plantations at Ootacamund, there seems to be, *now*, every chance of Jesuit's bark being naturalized on our glorious Hill ranges, and quinine brought within the reach of every body vexed of that devil '*Malaria.*'

At the same time that Cinchona is succeeding so admirably on the Blue Mountains, it is in equally flourishing condition on the higher mountains of Jamaica, and, we believe, also on the mountain-ranges of Java. We are not aware whether its cultivation has been attempted on the noble table-lands of Southern Africa, in Natal for instance, at present. In the last-mentioned country there are glorious tracts of country, healthy and well-watered, 3,000 feet above the sea level, which seem to invite its introduction.

It is difficult to know whence to glean a few descriptions from the "*Treasury of Botany*" which may give our readers an idea of the scope and style of the work.

We look out from our own Bungalow, and in the compound we find a tree bursting into blossom and delicious fragrance, that we may as well select for quotation. It is the *Millingtonia Hortensis*; let us see what Maunder says of this lovely ornament of our Indian gardens.

"MILLINGTONIA *Hortensis* is the only representative of a bignoniaceous genus, peculiar on account of its combining an arboreous habit with a fruit divided into two cells, by means of a partition running parallel with the direction of the valves. *Millingtonia* is a middle-sized tree, with impari-bipinnate leaves, quite entire leaflets, and large panicles of white flowers, emitting a delicious odour, on account of which the plant is cultivated in many parts of India and the Indian Archipelago. The calyx is bell-shaped, and with five equal and short lobes; the corolla has a very long tube, and is divided into five lobes, the two uppermost of which are more or less grown together; the stamens are four in number, and the anthers not divergent, as in most *Bignoniaceæ*, but parallel; both stamens and style are longer than the corolla, whilst the fruit is a smooth flat capsule, enclosing broadly-winged seeds. Several other species formerly classed under *Millingtonia* have now more properly been referred to other genera of *Bignoniaceæ.*"

For comparison sake let us turn to "Drury's Indian Flora," and see how he treats the same tree.

"Genus iii. MILLINGTONIA.

Didynamia angiospermia, Sex. Syst.

Deriv. In honour of Thomas Millington, an English Botanist and Author.

(1) M. Hortensis (*Linn.*)

Ident. Linn. f. Suppl. p. 291. Dec. Prod. ix. p. 182.

Syn. Bignonia Azedarachta, *Koen.* B. Suberosa. Roxb. *Flor. Ind.* iii. p. 111.

Engravings. Roxb. Cor. iii. t. 214.

SPEC. CHAR. Tree ; leaves opposite, bipinnate with an odd one, leaflets entire, panicle large, oppositely-branched, many flowered: flowers white, fragrant.

Said to be a native of Ajmere, flowering in the cold season."

This beautiful tree grows in perfection in Malwa, and in October, November, and December is covered with the most beautiful wax-like bloom that scents all the air around. But it *never* seeds. Its roots throw up young shoots that are detached by the Mâlees, and grow very readily on removal from the parent tree. But the lovely milk-white bloom falls barren from the tree and strews the ground beneath with a carpet of perfumed beauty. This dehiscence sometimes takes place so soon as the flower expands into perfection and before the dehiscence of the anther can take place so as to fertilize the ovules within the immature ovary.

Many flowers fall before expansion of the border, in which cases their falling is owing to a breaking of the peduncle just as it joins the calyx, and upon close examination it is seen that at the point of fracture a ring of strands of white fibre has been broken across, after which the corolla has fallen of its own weight.

The Treasury of Botany does not disdain the introduction of vernacular names. Thus we find next to "KAKOON, an

Indian name for Setaria Italica;" "KALADANA, *Pharbitis Nil.*" "BABOOL, the Indian name for the gum-bearing *Acacia Arabica.*" "MUDAR, *Calotropis gigantea,* and *C. procera.*" "MUHOOA or MUOHWA, an Indian name for *Bassia latifolia.*" "AKHROAT, INDIAN, *Aleurites triloba.*"

It will be seen from the specimen descriptions cited above that "The Treasury of Botany" is intended to fulfil the purpose of a popular manual, giving brief and easy notices of the most noted, useful, and conspicuous members of the Flora of the world. It does not aim at more, and certainly, as far as it goes, it is unexceptionably good of its kind.

It is contributed to by eminent men who know what they write about, and how to write, and how to condense without becoming obscure. For the sportsman who wishes to know something of the forest and jungle in which he seeks his quarry, it will prove most useful and entertaining, and should accompany him in all his shikar trips, balancing the sister volume on Natural History, revised and corrected by Dr. Spencer Cobbold. To those who form the bulk of our readers we can recommend "The Treasury" strongly, for we think it may make many of them dip into Botany, and, growing fascinated, yield themselves prisoners to Flora who neglected her before, and to whom the vegetable world was as the primrose to Wordsworth's peasant—

"A primrose by the river's brim,
A yellow primrose was to him,
And it was nothing more."

On the Curability of Certain forms of Insanity, Epilepsy, Catalepsy, and Hysteria in Females. By BAKER BROWN, F. R. C. S., Senior Surgeon to the London Surgical Home, &c. &c. London: ROBT. HARDWICKE, 1866, Small 8vo., pp. 85.

IN all probability the majority of our readers have become acquainted, through the medium of the English Medical Journals, with Mr. Baker Brown's views and practice as set forth in the above-named work. If not, a very few extracts will suffice to exhibit them.

"Long and frequent observation convinced me that a large number of affections peculiar to females, depended on loss of nerve power, and that this was produced by peripheral irritation, arising originally in some branches of the pudic nerve, more particularly the incident nerve supplying the clitoris, and sometimes the small branches which supply the vagina, perinæum, and anus.

"Closer observation satisfied me that the greater or less severity of the functional affections observed, depended upon the amount and length of irritation, and the consequent amount of loss of nerve power.

"Nor are functional disorders the only consequence, but in some cases, severe organic lesions." Page 7.

The cause having been found, then,—"peripheral irritation of the incident nerve supplying the clitoris"—the cure is as follows:—

"The patient having been placed *completely* under the influence of chloroform, the clitoris is freely excised either by scissors or knife—I always prefer the scissors. The wound is then firmly plugged with graduated compresses of lint and a pad, well secured by a T bandage.

"A grain of opium is introduced per rectum, the patient placed in bed, and most carefully watched by a nurse, to prevent hæmorrhage by any disturbance of the dressing. The neglect of this precaution will be frequently followed by alarming hæmorrhage, and consequent injurious results.

"The diet must be unstimulating, and consist of milk, farinaceous food, fish, and occasionally chicken; all alcoholic or fermented liquors being strictly prohibited. The strictest quiet must be enjoined, and the attention of relatives, if possible, avoided, so that the moral influence of medical attendant and nurse may be uninterruptedly maintained." Page 17.

Mr. Brown says that he always makes a point of having his diagnosis confirmed by the patient or her friends; but:—

"On personal examination, the peculiar straight and coarse hirsute growth; the depression in the centre of the perinæum; the peculiar follicular secretion; the alteration of structure of the parts, mucous membrane taking on the character of skin; and muscle having become hypertrophied and generally tending towards a fibrous or cartilaginous degeneration; will all be recognized by the practitioner who has once had his attention drawn to these subjects." Page 16.

The author says that he has, for the last six or seven years, openly and consistently advocated this "effectual method." That he has been met with many objections, such as :—

> " Unsexing the female, preventing the normal excitement consequent on marital intercourse, or actually, as some most absurdly and unphilosophically assert, causing sterility ; whereas my cases will show fact to be directly converse to all these theories. * * *
>
> " Another objection has been made that several of my cases have not been permanently cured, but have had relapses in a few weeks or months. This must necessarily be so with all new methods of treatment ; but each such case is of incalculable importance, as teaching me to exclude any but temporary hope of relief to some, while to others I can speak all the more positively as to their ultimate permanent recovery." Pages 9, 10.

We must acknowledge that we do not quite appreciate the logic of the last sentence, nor do we exactly understand what Mr. Brown means by a " temporary hope."

> " Lastly, objections have been advanced against the morality of the operation, and I am here at a loss how to give an answer, for I can hardly conceive how such a question can be raised against a method of treatment which has for its object the cure of a disease, that is rapidly tending to lower the moral tone, and which treatment is dictated by the loftiest and most moral considerations." Page 12.

Mr. Brown tells us that the following gentlemen adopt his views and treatment in proper cases :—

> " Sir J. Simpson ; Dr. Beattie, of Dublin ; Sir J. Fife and Dr. Dawson, of Newcastle-on-Tyne; Dr. Duke, late of Chichester ; Dr. Shettle, of Shaftesbury ; John Harrison, Esq., of Chester ; Drs. Savage, Routh, and Rogers in London ; Mr. Boyer Brown, New South Wales ; Dr. Barratt, and Messrs. Harper, Chambers, J. B. Brown, Junior, and Bantock, of the London Surgical Home, and very many others." Page 13.

As to the length of time over which the " cure" extends, our author says :—

> " A month is generally required for perfect healing of the wound, at the end of which time it is difficult for the uninformed, or non-medical, to discover any trace of an operation.
>
> " The rapid improvement of the patient immediately after removal of the source of irritation is most marked, first in the countenance, and soon afterwards by improved digestion and other evidences of healthy assimilation.
>
> " It cannot be too often repeated, that this improvement can only be made permanent, in many cases, by careful watching and moral training on the part of both patient and friends.

"In the large majority of cases, I have administered no medicines, trusting entirely to recovery, after the removal of the source of irritation. Sometimes, however, we may be materially aided by the use of such medicines as the bromides of potassium and ammonium, belladonna, &c." Page 18.

Mr. Brown gives details of a great number of cases, we do not know whether they are selected ones, or whether all the instances of excision of the clitoris performed at the "London Surgical Home" are reported. We have just run through the list in order to compare the cures with the failures, and find the result as follows:

Diseases.	*No. of Cases.*	*Failures.*	*Remarks.*
Hysteria	14	1	"A regular impostor."
Spinal Irritation	7	0	In one, no "cure" reported, but "rapid improvement."
Epileptoid Convulsions or Hysterical Epilepsy.	7	0	
Cataleptic Fits	5	1	Relieved.
Epilepsy*	8	1	do.
Idiotcy (*sic*) and Insanity	7	1	Relief, but no permanent cure.

We have gone over the cases a second time to ascertain at how remote a period after operation, Mr. Brown has been able to furnish any account of those patients whom he reports as "cured," and we find the results as follows:—

Of the thirteen cases of *Hysteria* cured, the reports embrace in 1 case, a period of 13 days; in 1, 21 days; in 1, 26 days; in 2, 30 days; in 1, 48 days; in 2, 2 years; in 2, 3 years; in 1, 4 years; in 1, 5 years; and 1 uncertain.

Of the seven cases of *Spinal Irritation* cured, the reports embrace in 1 case, a period of 7 weeks; in 1, 6 months; in 1, 7 months; in 1, over 2 years; in 1, 3 years; (this patient was cured of amaurosis, and Mr. Brown says "I have had other cases exactly similar, with like results"); and in 2, uncertain, about 4 years apparently.

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* Mr. Brown says at the conclusion of the chapter on Epilepsy:—"I have a much larger number of cases occurring in private practice, but, for that reason, am obliged to omit them. I shall, however, when a longer time has elapsed, publish them."

Of the seven cases of *Hysterical Epilepsy* cured, in 1 case the reports embrace a period of 25 days; in 5, about 6 weeks; in 1, 5¼ years.

Of the four cases of *Cataleptic Fits* cured, the reports embrace in 1 case, a period of 5 weeks; in 1, several weeks; in 1, 6 months; and in 1, 5 years.

Of the seven cases of *Epilepsy* cured, the reports extend in 1 case over a period of 2 months; in 1, some time; in 1, many months; in 1, 1 year; in 2, 2 years; and 1 uncertain, said to have been cured in a month and to have been heard of "later in the year."

Of the six cases of *Idiocy and Insanity* cured, the reports embrace the following periods. In 1 case, many weeks; in 1, 15 months; in 2, over 2 years; in 2, 4 years.

Mr. Baker Brown must excuse our saying that in many of the above cases, sufficiently long periods have not elapsed to enable him to speak as to the permanency of the cure. From his *Hysteria* series we would eliminate the seven cases under observation less than seven weeks; and from the *Spinal Irritation* series, the three of which no reports are given after seven months. In fact, with regard to the whole of these cases, we would ask our author whether it is not possible that a thorough perseverance in the "milder treatment with careful watching," which he finds sufficient in patients under ten years of age, would not have effected a cure? We would have placed all the *Spinal Irritation* cases under the head of *Hysteria*; and we firmly believe that they might have been cured without any resort to what Mr. Brown designates as "my usual operation." We have seen very many such cases, and we feel certain that *tact* is far more effectual than *talent* in their cure.

We remember a remarkable case. A young lady, about 20 years of age, had been confined to her couch with "spinal affection" for several years, and had "suffered many things of many physicians." At last a 'cute friend of ours was consulted, and, detecting hysteria as a large element in the case, he said at once;—"Now, Miss—, I have paid you the promised visit, but as my time is very much occupied, I am sorry to say I cannot call again, but I shall be happy to see you at my house at 3 o'clock next Wednesday." The young lady excitedly declared the utter impossibility of her moving; but, nevertheless, she walked into our

friend's consulting roo
appointed day!

Within the last few
woman who detailed
had suffered for a long
simulated morbus coxæ
the femur was rotated
she could not flex the
stand without support.
placebo only, but on th
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in her hearing, to have
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As to the cases rela
Fits, we should be inc
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out of the four "cures,"
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The *Epileptic* cases
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very short intervals. Romberg[*] says:—"Occasionally the intervals in Epilepsy are much protracted, the physician therefore should exercise much caution in prognosticating a permanent recovery." And he mentions one case in which daily recurring fits were followed by an interval of two years, when they again made their appearance; and another case in which the disease remained in abeyance for twenty years and then broke out with increased intensity.

None of Mr. Brown's cases of Epilepsy appear to have been within his knowledge for a longer period than two years. So that again we say the "cures" are by no means indisputable. And, generally, as regards the treatment, Mr. Brown must be reminded that Esquirol and others have observed that *a change of the physician and of treatment* may prolong the intervals and even give rise to a pause.

In thinking seriously over Mr. Brown's practice, it must be remembered that Epilepsy is as frequent in the male as in the female; indeed Celsus, Heberden, Soemmerring, Cooke, and Cheyne, say that the preponderance, in true Epilepsy, is on the side of the males.[†] Elliotson says the disease is more common in males; and Watson[‡] says, "I have certainly seen more epileptic boys and men than girls and women." It is but right though to mention that the experience of Foville and others is opposed to this view. However, we must recognize the fact that sex has but little, if any, influence on the disease.

Almost all writers on Epilepsy acknowledge that, although the remote cause of the disease must be in the brain, the peripheral irritation which onanism sets up may be an exciting cause, in either sex. And we therefore think there was some pertinence in the question put to Mr. Brown, in one of the London Medical Journals, whether he is prepared to put in practice on the male, the corresponding operation to that which he finds so effectual in the female?

As regards the *Idiocy and Insanity* cases, we would ask Mr. Brown whether he seriously believes that by simply

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[*] Diseases of the Nervous System: Sydenham Society, 1853, volume ii. page 218.

[†] Copland's Dictionary of Medicine. Art. Epilepsy.

[‡] Lectures on the Theory and Practice of Physic, 3rd edition, volume i. page 638.

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Insane person ?

Mr. Brown has been very f
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is always the case with any
wicke's name on its title pag

Report on Vaccination, th
Provinces of Madras, i
Authority. Madras: P
Co., 1866. 8vo. Pages

MR. SHAW, the Principal Insp
ment, introduces the Repo
Superintendent of Vaccinati
make the following extracts :

"During the year 1865 many
partment. The number of vaccina
and those remaining in the de
professional supervision. As n
a period of change, there has b
operations, as
been perform
for the perio
been completed are, however, so
inclined to the belief, that more
reduced establishment, under ef
times when the "reported" nu
excess.

1864 ..... 311, 587.
1865...... 191, 394.

* *

"The ready way in which
Districts seek for medical aid, at
tendents of Vaccination, affords e
ally there will be less difficult
people. I beg to recommend, f
Government, the proposition to
season, with each Superintenden
of sufficient size, to enable the
relief in important cases.

* *

I have no doubt whatever

vaccinators will be necessary when the present establishment is complete and in working order. Something has already been done by Dr. Shortt in pressing upon Zemindars and other owners of landed property, the importance of their keeping up vaccinators on their estates at their own cost. The appeal has been so far responded to that thirty-one vaccinators are now maintained in various parts of the country, at the private expense of their employers.

"The number of large landed proprietors in this Presidency however is so small, that I do not expect much material help from this source.

"In Bombay, I observe, that a beginning has been made by the Local Municipal Associations in extending vaccination, by means of vaccinators locally entertained. I do not see why a similar practice should not be introduced in this Presidency also, so that the Government vaccinators might the better pursue their functions elsewhere."

The above extracts will save us from doing more than just glancing at the report itself.

Under the present organization, the Madras Vaccination Department comprises :—

1 General Superintendent.

11 Deputy Superintendents (selected, with one exception, from the ranks of the Subordinate Medical Department, and all bearing the title of Sub-Assistant Surgeon).

145 Vaccinators, and

25 Peons.

So that there is 1 Deputy Superintendent, and 13 or 14 Vaccinators, to every two Collectorates in the Presidency.

The percentage of success of the vaccinations performed during the year varies from 70·13, in the Madura Circle, to 96·05, in the North Arcot Circle, the average being 87·04.

Dr. Shortt remarks with reference to the decrease of 120,193 vaccinations in 1865, on the numbers reported as vaccinated in 1864, that during the greater part of the first six months of 1865, the work was at a stand-still in many districts and irregularly conducted in others, owing to the department being in a transitional state ; and that the greater trustworthiness of the work performed during the second half of 1865 counterbalances that of the previous eighteen months, which, for the greater part, is untrustworthy.

We think this statement shows that the reorganization of the department has not been effected a day too soon.

Upon referring to the tables we find that during the fir six months of 1865 the number of cases *reported* to ha been vaccinated was 95,721, with a success of 88·35 p cent., and the number of actual vaccinations in the seco half of the year was 95,673, with a percentage of success 81·13.

Bearing in mind that the new organization can only said to have been complete during the last quarter of t year, we think every one concerned either in originating or in carrying it out, may be congratulated upon its promi of success.

Dr. Shortt enters upon several interesting points in hi report, which we have not space to enlarge upon. He remarks upon "the alleged degeneracy of vaccine lymph, and reports that the experience of the department does no support the degeneracy theory. He has experimentall proved, however, what Dr. Husband also observed, "tha lymph preserved in glass tubes when first used generally passes through its several stages either prematurely, the fifth o sixth day vesicles showing the character of those of th eighth and tenth days, or the areola is sometimes covere with small vesications. Notwithstanding this, the lymp when transferred to other subjects, produces the genuine disease in its true pristine character." He also remarks upo the mode of operating, the best kind of instrument, th number of punctures, &c.

The zealous Superintendent is a strong "protectionist, and urges that vaccination should be made compulsor He remarks that even in Great Britain and in every Europea nation, the people are compelled to submit to vaccination o behalf of the public weal. "And that British India, wher surrounded as we are by indifference and ignorance, shoul form an exception to compulsory vaccination, to suit an prejudice which is believed to exist in the native mind, an which I believe to be a mere myth, is surprising; and th public at large should not be made to suffer."

We quite agree with Dr. Shortt, and trust that o period of service in the tropics will not have expired, befo not only a Compulsory Vaccination Act, but also a Diseas Prevention Act, shall have been passed by the several Indian Legislative Councils. It cannot be too strongly urg that *preventible diseases should be prevented.* The law punishes a would-be suicide: why should it take no cognizance of wholesale destruction of life. Is it on the principle that "to kill one man makes a murderer, but to kill a thousand makes either a hero or a physician?"

Copious extracts from the Reports of the District Superintendents are given, and the results are conveniently tabulated so as to show at a glance the operations of the Department during the year. The order of Government on the Report will be found in the MEDICAL INTELLIGENCE.

A Hand-book of the Trees, Shrubs, and Herbaceous Plants growing in the Madras Agri-Horticultural Society's Gardens and Neighbourhood of Madras. Arranged according to the Natural System. By ROBT. N. BROWN, late Superintendent of the Agri-Horticultural Society's Gardens, Madras. Second edition, carefully revised. With a Supplement by J. J. WOOD, Assistant to the Professor of Botany, Medical College. Madras: J. HIGGINBOTHAM. 1866, 8vo. pages 303.

THE following extract from Mr. Wood's preface will show the scope and object of the above work:—

"There are probably many in Madras, pursuing the study of Botany, whose business will seldom or never take them into the Mofussil; these are the parties to whom something of an approach to a *local* Flora, such as this is, would, at any time, be a great boon. With the exception of the mere elements of the study, Botany must necessarily be a sealed book to, at least, some of them; since most of the works from which any knowledge of the plants around them could be obtained, are, comparatively, very rare, in great request, and, therefore, very expensive.

"The want in Madras of such a work as this (though little more than a catalogue) may be said to be proved by the ready sale which the First Edition met with.

"It is in no way presumed that the supplement at the end of the book completes the Flora of Madras and its neighbourhood. To include in this manual most of the plants growing, or reported to be found in Madras, would amount to nothing less than the compiling of a Flora of the Coromandel. We have simply added such plants found here, as we considered important, and which were not included in the First Edition."

With all deference to Mr. Wood, we think that he takes far too modest a view of the character of the work he has edited; we cannot believe that its use is necessarily so very limited and restricted as he supposes. Upon looking over the pages, we find that there is quite sufficient information given to enable any person, interested in horticulture and with an elementary knowledge of Botany, to determine the species of plants and shrubs, and as the majority of those described are not peculiar to Madras alone, Mofussil Floriculturists may find the book an aid to them.

Mr. Wood also writes of the work as a mere Catalogue. We do not agree with him, for we find a *description* and an account of the *distribution* and *properties* of each order of plants noticed, and there is a very useful feature in the book, which might be imitated with great advantage in other botanical works: viz., the derivation and meaning of the names of genera are given (so far as we have ascertained) in every instance. We say this is a useful feature, because names with which one is unfamiliar are much better remembered when their exact meaning is known, and it is not every one who has his classics at his tongue's end ready to furnish him with the requisite information. Moreover compounds of two or more Greek or Latin words are not always recognized as to their origin when heard for the first time. For instance who would recognize at first glance "Acacia, from *ac*, a point, and *akazo*, to sharpen, many of the species having thorns or prickles:" or "Sapindus, from *sapo*, *Indicus*;" or "Nauclea, from *naus*, a ship, and *kleio*, to inclose; the half capsule is hull-shaped;" or "Ipomœa from *ips*, bindweed, and *homoios*, similar." Further than this it is not always that these generic titles are derived from the Greek or Latin, for very many of them are simply th latinized names of distinguished Botanists or Philosophers as Griffithia (Griffith), Leea (Lee), Poivrea (Poivre), Lagerstrœmia (Lagerstrœm), &c. And other generic names a mere modifications of those given to the trees or plants b the inhabitants of the countries from whence first obtained as Mussænda, Nelumbium, (Singhalese); Guazuma (Mex can); Moringa, Pongamia, Cajanus (Malabar); Agati (San skrit); Rosa (Celtic); Macuna (Brazilian); &c.

The book is furnished with a copious index of both the Botanical and English names.

The Editor's labours have not been confined merely to the production of the supplement, but the whole text has been most carefully corrected.

The typography and general appearance of the book are alone sufficient to indicate a colonial origin; but in all probability the prospect of a somewhat limited demand, and the necessity for the price being very moderate, have proved such "urgent financial considerations" to the spirited publisher as to induce him to sacrifice mere appearances to utility. We hope that a speedy sale of this second edition will follow as the due reward of Mr. Higginbotham's enterprize.

Report on a Project for the Drainage of the Town of Madras. By Captain HECTOR TULLOCH, Royal Engineers. Madras: GANTZ BROTHERS, 1865. Crown 8vo. pp. 120.

WE have perused and reperused this Report very carefully, and have much pleasure in introducing it to the notice of our readers; for on attentive consideration it will be seen that it is in reality not merely a project for the drainage of Madras, but is also suggestive as to the disposal of the sewage of any town in India.

Captain Tulloch concludes some introductory remarks with the following paragraph which will show the scope of his report:

> "A knowledge of the natural position and features of a town is so indispensable when the question of its drainage is to be considered, that a description of the more important physical characteristics of Madras will form the first part of this report. The general condition of the inhabitants, *i.e.* the number and density of the population, the construction and arrangement of the dwellings, the present means of water-supply and drainage, &c. will next be treated of. Without this information no opinion could well be formed on the suitableness of the project to the requirements of the town. The system of 'Dry Conservancy' which has attracted so much attention lately, will next be discussed. I shall then endeavour to meet the 'Objections to Sewers' which are occasionally urged, in consequence

of the favour with which dry conservancy has been received. The rest of this Report will be confined to an explanation of the project now submitted to Government, and to questions incidentally arising out of it."

We purpose noticing here the principal points only to which Capt. Tulloch calls attention. The Report itself is so condensed and so freed from all unnecessary "talk," that if we were anxious to show all that its author has done, we should have to reproduce it entire. That Captain Tulloch has most thoroughly gone into every circumstance that could in the least influence his project, may be known by the fact that he has himself superintended the taking of levels and the making of borings over the whole district which he proposes to drain. He shows that the area of the tract of *Madras Proper* may be taken at 27 square miles.

> "The strata in parts consist almost entirely of sand, but generally of alternate layers of sand and clay. There is no rock to be found except at a considerable depth below the surface, a depth which none of the sewers which it is proposed to lay down will approach. The town stands on a sandy plain—the lowest parts being from 2 to 6 feet, and the highest from 16 to 24 feet, above mean sea level. The average level of the whole of Madras may be taken at from 8 to 12 feet above the datum line. Water is found in all parts at a few feet above or below mean sea level. * * * There is no natural line of drainage for the Town of Madras, *considered as a whole*. This is an important point, and one of the truth of which it will be well to be convinced by a reference to the map of Madras which accompanies this Report. Each district, however, has its ridges and valleys which can be turned to account when we take it *by itself*, and lay down its branch-sewers and pipe-drains irrespective of the other neighbourhoods."

Madras may be conveniently divided into four drainage divisions.

1. The districts of Royapoorum and Tondiarpett, lying north of the Railway, between Cochrane's Canal and the sea; thickly populated in its southern portion only. A ridge half a mile broad and from 12 to 15 feet above mean sea level runs north and south through the centre of the district, and slopes both east and west.

2. Bounded by the Railway on the north, the Canal on the west, the Cooum on the south, and the Sea on the east. It contains Black Town and Fort St. George. There are two parallel ridges running north and south from 12 to 21 feet

above datum line, and having an intervening valley, 6 to 8 feet above datum line; this valley is in Popham's Broadway. "Of all the districts of Madras, Black Town offers the greatest facilities for drainage."

3. Vepery, Pursewakum, Egmore, and Elemboor, bounded on the south by the Cooum, on the east by the Canal, on the north by Captain Cotton's Canal, and on the west by Chetpet, Kilpauk and Perambore. This division is somewhat difficult to drain.

4. The district south of the Cooum, containing Chintadrapett, Triplicane and St. Thomé. It is very irregular but presents no important feature.

The natural drainage outfalls of Madras are the rivers Cooum and Adyar, Cochrane's Canal and the Sea.

The *Cooum* may be considered an extensive tank. A quantity of filth has accumulated from the constant flow of sewage into it, from Vepery, Egmore, Chintadrapett and part of Triplicane, so that the bed of the river is raised considerably above its natural level. For the last three miles of its length it has no fall at all. For nine months of the year it has no outlet to the sea. To attempt to convert it into a sewer, is simply to make it a cess-pool.

The *Adyar* has also no outlet to the sea except for a short time during the north-east monsoon. It is even less adapted for a drainage outfall than the Cooum.

Cochrane's Canal has had its bed raised by accumulation of solid matter, there being no current. At present it is the cess-pool for the western portion of Black Town.

The *Sea Coast* of Madras extends about 9 miles. The slope is very gradual; at 3½ miles the depth is about 63 feet. The difference between high and low tide is about 3 feet. There are two principal currents, most likely caused by the wind, flowing, in opposite directions, parallel to the coast.

A very complete meteorological chart accompanies this section of the report.

The second chapter is devoted to a consideration of the present condition of the town of Madras. It is shown that the density of the population is about 2½ times that of London, where the average number of persons to a house is 5. In Madras the houses are 32,610, population 427,771, average

[illegible] to be rendered unfit for
[illegible] arred, for the wells are
and in consequence have been abandone
facts, which have been brought to
borings I have made in all parts of the
Government. I bring them thus prom
order to show the necessity for a system
and sewers, which, while it relieves the d
will, at the same time, preserve the wat
contamination.† "

Captain Tulloch goes on to show t
belief, there are, as a rule, no cess-p
solid filth is removed by scavengers
Municipal establishment. But liqu
into the street drains, which are ope

" * Every well in the town should be clos
foul water never ceases to give off poisonous g
the longer it is kept."

" † In some places I met with pure liquid
about this, for the smell was so overpowering
in the matter. As a general rule, a well dug
produce good water—provided that it is suffici
ings. By good water I mean water not impre
situated, as Madras is, on the sea-coast, and
be impossible, unless a very great number of b
the water would or would not be slightly b
occurs, the sand is uncoloured, sharp and s
which sewage has percolated through the up
coloured dark with organic matter, and is m
smell. It is remarkable that some wells dug
populated neighbourhoods produced good wa
explain this peculiarity. The chief supply

and, like the sewers, built of ordinary brick set in shell-lime mortar :—

"They are as porous as can be, and smell most offensively. Having no proper slope, they are daily choked up with filth, the removal of which is effected by manual labour only. It is for the cleansing of these drains, which are a receptacle for all the solid filth of the streets, that so large an establishment of scavengers is employed by the Municipal Department."

The present main sewers are described, and it is noticed that there are individual streets and extensive areas which have no outlet at all;—the sewage stands in open trenches round the dwellings, and stagnates from day to day, and from month to month.

We do not for a moment mean to intimate that Captain Tulloch is exposing a state of things, the existence of which was not previously known, but he has very properly introduced into his Report those details which have been ascertained upon his personal observation. The facts being as stated, who can wonder at miasmatic diseases being endemic in Madras, and at their, every now and then, breaking out under epidemic influence?

Captain Tulloch in his third chapter considers "Dry Conservancy." He first notices Dr. Hathaway's* system and next Dr. Thudichum's and the Rev. Mr. Moule's improvements—with which our readers are familiar. As regards the system of dry earth conservancy, Captain Tulloch says :—

"So far as the application of dry conservancy to latrines is concerned, I am entirely in accord with the advocates of this system—provided that the cost of it is not to be borne by the people, who could never, as will be shown presently, afford to pay for it. But some of these advocates, in the heat of the excitement caused by a new and very important discovery, will not look at the question except from one point of view. The consequence is, that the most absurd and extraordinary statements are made by them as to the efficacy of the new principles, and as to the wonderful application that may be made of them. 'The old system of drainage by sewers is obsolete—is a quarter of a century behind the age—is not worthy the science of the day. Dry conservancy absolutely revolutionizes the subject of drainage. We must begin *ab initio*—the great sanitary problem of the day has been solved. We are to have no more sewers and no more nuisances. The town is to be cleansed on new principles, and at little or no cost to the inhabitants.' "

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* The details of this system will be found *in extenso* at page 222 of vol. vi. of this Journal.

Captain Tulloch goes thoroughly into the subject, and he appears to have selected Mr. Cornish's pamphlet on "The Cleansing of Towns" as the chief document advocating the application of the dry-earth system to Indian towns in general and to Madras in particular; so that this chapter might have been headed "Refutation of the arguments contained in Mr. Cornish's pamphlet." Our author shows that there is a fallacy in the argument, that, "because dry conservancy is the best system for privies; therefore it is the best system for towns;" inasmuch as in privies excrementitious matters only are dealt with, and as regards towns, the same excrementitious matters form but an inappreciable amount of the filth to be removed.

> "It is insisted that this system must *supersede* that of sewers. The advocates of the former keep urging that all the urine and fæces will be carried away and converted into manure, and, of course, nobody can deny the proposition which is perfectly patent. But it is also true that almost all the sewage will be left behind. In a word, though urine and fæces are undoubtedly the most offensive part of town sewage, yet in bulk they do not amount (as in the case of London for instance) to more than $\frac{1}{200}$th. of the whole. This is so easily proved, that it can escape the observation only of persons so wedded to a new theory, as to be unable to look adverse facts in the face, but it explains at the same time why those who have to remove the sewage in England do not consider the extravagant proposition to do away with sewers worth refuting."

If in Madras 5 gallons only of water are used per head of the population, the excrementitious matter (2¼ lbs.) will be less than one-twentieth of the actual sewage. But Mr. Fraser, C. E., proposes by his water-supply scheme, now in the course of execution, to supply 20 gallons per head per diem, so that the excrementitious matters will form but one-hundredth of the waste water. In Bombay the proportion of night-soil to liquid sewage is calculated at 1 to 775.

It is quite unnecessary to reproduce here the arguments used to show the necessity for the removal of waste water—to prove, in fact, that it is liquid sewage. The advocates of dry conservancy acknowledge that waste water is *only less offensive* than excrement; but we are not aware that they have ever proposed any mode of getting rid of it, though we cannot suppose that any sanitarian ever contemplated its being removed by such a system of open drains as now forms the grand nuisance of Madras. Captain Tulloch puts the system of dry conservancy as a whole before Government. He says public privies of an improved design are to be erected in all parts of the town, and at such convenient distances apart as shall induce the inhabitants to use them, and he copies Mr. Cornish's plan of a suitable latrine. And here we must endeavour to epitomise our author.

The entire success of the scheme will depend upon a universal use being made of the latrines. If some use them and some do not, we shall have both the expense of the new system and the nuisance of the old. People can scarcely be compelled by law to use the latrines, for "every man's house is his castle."

The existing public latrines are made use of by women of the very lowest classes only, and merely under strict police supervision.

> "Can it be expected that any respectable man will permit his wife or his daughters to leave the privacy of their house—to walk, say, 150 yards in dry and wet weather along a public street to a public place for *such a purpose*—to mix there with perfect strangers —and to perform such a duty in their very presence. Yet, if the women as well as the men did not use the privies, what measure of success would attend the introduction of dry conservancy."

* * * *

> "Besides, how will it be possible to arrange for the wants of the sick, who will not be able to leave their dwellings, and who, at the rate of five sick in every hundred of population, will amount in number to 430,000 × 5 ÷ 100 = 21,500 souls—producing daily more than 21 tons of excrementitious matter."

Will Europeans and East Indians submit to the arrangement? are separate latrines to be provided for the different races? If so the cost will be increased. In rainy weather, when urine and fæces are most offensive, will the people be induced to go to the latrines? Will not the latrines themselves become mere cess-pits by neglect of the toties, unless efficient supervision is exercised over them? Can natives be trusted for this purpose? If Europeans are employed, again the expense will be increased.

One great advantage has been claimed for universal dry conservancy, viz., that it is much cheaper than the sewer system.

> "This is certainly the most unfortunate mistake that has yet been made by the advocates of the new theory, and the one which will tend to damage it more than anything else. Dr. Cornish says:—

" 'Before spending some half a million of money in a system sewers for Madras, it may be well perhaps for the rate-payers, w will ultimately have to defray the cost of the 'improvement,' to quire whether for an expenditure of one-twentieth part of the mon it may not be possible to make our chief city a model of cleanline and its excreta so valuable, that the cost of collection should b mere trifle in the municipal expenditure.'

" It will thus be seen that 2½ lacs of rupees is the sum set down cleansing Madras thoroughly according to the new principles. has always been maintained by the Engineering profession, th whatever objections might be raised to the sewer system, it was *cheapest* means known of disposing of sewage. A sewer, once bu properly, will, with occasional trifling repairs, last for centuries. inconceivable quantity of water may be passed through it. It w work as well in the night as in the day. With fair play the sup vision required is most trifling. It is necessary, therefore, to asc tain if dry conservancy is cheaper."

How many latrines will be required ? European Reg mental privies provide seats in the proportion of about 1 per cent. of strength. But Captain Tulloch takes 6 seats f every hundred souls, equal to 25,800 seats for the inhabitan of Madras. Mr. Cornish's latrine contains 40 seats, and estimated to cost 2,384 Rupees. Total latrines requir 645. 100 existing latrines might be altered for 2,000 R each ;—total cost :—

	Rs.	Rs.
100 present latrines	× 2,000 =	2,00,000
545 new latrines	× 2,384 =	12,99,280
	Rupees	14,99,280

645 new urinals, estimated by Captain Tulloch cost Rupees 400 each. 645 × 400 = Rupees 2,58,000.

645 sheds to keep dry earth in, again according Captain Tulloch, Rs. 500 each—645 × 500 = Rs. 3,22,5

Captain Tulloch next estimates the amount of ground be covered by these buildings. He is alone responsible the estimate, except as regards the latrines, and here he a to the area, a ten feet wide passage all round and a lavato His figures are :

	Square feet.
Latrines.. ...	2,180,000
Urinals	322,500
Sheds.........	2,580,000

Total...5,082,500 = 2,117 grounds of la

Land in the heart of the town is expensive. On the outskirts of the town, the Collector's Department have valued some land required for the project at 400 and 350 Rupees per ground. However, Captain Tulloch takes the moderate price of Rupees 250 per ground, and the cost of that required for the above purposes will then be Rupees 5,29,250.

The Conservancy Establishment required is next noticed. Mr. Cornish says four toties to each latrine, and Captain Tulloch says suppose the four toties to look after both latrine and urinal, then 2,580 toties will be required; and two will be required at each shed to pound and store the clay, &c. 1,290 toties, total 3,870 souls. Suppose their pay only 3½ Rupees each per mensem, total monthly cost Rupees 13,545, and the annual cost Rupees 1,62,540. At 5 per cent. the above sum would represent a capital of Rupees 32,50,800.

The cost of removal of the manure is next considered. We have not space to reproduce the calculations, but it is shown that about 570 pairs of bullocks would be required daily, costing, at 12 Rupees per pair per month, an annual sum of Rupees 82,080, which capitalized at 5 per cent. would be Rupees 16,41,600!

"Without going further, I will sum up the total cost of universal dry conservancy for Madras as proposed to be carried out by Dr. Cornish.

	Rs.
Cost of Latrines..................	14,99,280
„ Urinals..........................	2,58,000
„ Sheds..........	3,22,500
„ Land for above...................	5,29,250
„ Establishment..................	32,50,800
„ Carting away manure..........	16,41,600
Total Rupees...	75,01,430

"I was as unprepared for this result, when I commenced the calculations, as, no doubt, Government will be to have it placed before them. Indeed, like many people, I supposed at first that there might be some grounds for Dr. Cornish's statement that Madras could be made 'a model of cleanliness' for 2½ lacs of rupees.* Yet no charge has been made for the carts which should be of a

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* There is no limit to the requirements of dry conservancy. Every increase in the population will require more latrines, more urinals, more sheds, more clay and a larger establishment. If the population increases at the rate of 1½ per cent. there will be yearly 430,000 x 1½ ÷ 100 = 6,450 more people to be provided for and they will require 10 latrines, 10 urinals, 10 sheds and 40 scavengers. In the course of a few years the cost would be something frightful."

> peculiar construction to prevent the escape of poisonous gases, and which will cost a great deal of money—no charge for lighting the buildings during the night which is proposed by Dr. Cornish himself—nor for the 25,800 earthenware pans required in the seats—nor for the iron receptacles for the urine and fæces—nor for the removal of the running stream of water proposed for use after defecation—no charge for the clay [in a foot note Capt. Tulloch says this charge would represent a capital of nearly 31 lacs]—no charge for supervision over the army of sweepers (3,870 in number)—and no charge for repairs of any kind whatsoever, which will be heavy for works of this nature,—and yet the cost has reached the enormous capital of 75 lacs of Rupees. It may be urged that the clay will be brought and the manure carried away for nothing. Let me even grant the extravagant proposition, that there are men in Madras willing to risk a capital of 16½ lacs of Rupees on the mere chance of being able to sell manure. The balance will then be 75 — 16½=58½ lacs of Rupees, and for this sum what is to be got—the removal of one-twentieth or of one-hundredth of the sewage, according as 5 or 20 gallons of water are used per head of the population. The rate-payers of Madras who will ultimately have to defray the cost of *this* 'improvement' would indeed do well to enquire whether Madras can be made a 'model' of cleanliness for 2½ lacs of Rupees; and if not, whether it would be worth while to secure the 'improvement' for three quarters of a million sterling, in order that they might have all the sewage left behind."

Captain Tulloch next quotes from the "Report on the Dry-earth System of Conservancy" by the late Madras Sanitary Commissioners—to the effect that in hospitals the cost of the system for Europeans is about 8 annas, and for Natives about 3 annas and 3 pies, per head per mensem; whilst in Barracks, Jails, &c., the cost may be taken at about 4 annas per head per mensem. And applying these data to Madras the monthly cost will be Rupees 1,07,500, and the annual cost Rupees 12,90,000, which capitalized at 5 per cent. will represent 258 lacs of Rupees or upwards of 2½ millions sterling—approaching the cost of the stupendous Drainage Works of London. And in this estimate the cost of the latrines and of the land has been entirely omitted!

> "It will now be seen why, in a previous part of this report, I said that I was entirely in accord with the advocates of the system of dry conservancy—provided that the cost of it was not to be borne by the people.
>
> * * *
>
> "It is really time to look facts in the face. The state of Madras is quite disgusting. Some thing must be done to remedy it sooner or later. Dr. Cornish says—'adopt dry conservancy, and Madras

will become a model of cleanliness for 2½ lacs of Rupees.' The Sanitary Commissioners, on the other hand, report officially to Government that dry conservancy will cost 4 Annas per man per month, which, as I have shown, represents a capital of 258 lacs of Rupees, and is more than 100 times the amount of Dr. Cornish's estimate. What is the use of urging that the manure produced on the new principles will fetch money, or that the cost of collecting it will be, as declared by Dr. Cornish, 'a mere trifle in the municipal expenditure'? Can any people be found in Madras willing to buy manure of the value of 2½ millions sterling? Because, until they come forward, some one must pay for the experiment, and it is utterly impossible that the inhabitants can afford to do so.

"When the advocates of dry conservancy themselves show that the cost of removing the excrementitious matters only will amount yearly to more than four times the whole Municipal income, it is really necessary to enquire whether there is not some other mode of cleansing Madras, and whether drainage by sewers is not, after all, both the cheapest and the most effectual means of doing it."

Want of space compels us to leave Captain Tulloch here for the present. In our next we hope to complete our notice of his Report by epitomizing his answers to Objections to Sewers, and the Description of his Project.

But we cannot close this paper without observing that Mr. Cornish has not been quite fairly dealt with in the Report. We know Captain Tulloch too well to suppose for a moment that he would wilfully misrepresent any man; in fact, we are quite sure that he would rather err in the other direction, and that a conviction of misrepresentation would be a matter of deep regret to him.

Captain Tulloch's first error as regards Mr. Cornish is in assuming that the latter gentleman in any part of his pamphlet states that the cost of dry conservancy is the one-twentieth part of half a million of money. Mr. Cornish's pamphlet is suggestive only, and all that he says is that it will be well for the rate-payers to enquire whether, &c. &c.

This is very far from making any such statement as is attributed to him: Captain Tulloch has here made the enquiry, and although Mr. Cornish may not perhaps quite accept his figures, we make no doubt he will own that the result of the enquiry shows that his question cannot be answered in the affirmative.

Secondly, Mr. Cornish insists upon the utilization of the excreta as manure, and that from the expense of the dry earth system must be deducted the value of the manure which he thinks will "*by and by* find a ready sale" at a price sufficient "to nearly pay the whole cost of the Conservancy Establishment." Nowhere does Mr. Cornish put this matter otherwise than as a contingency, he says distinctly that it is only "when the people shall have once learnt its value" that it will sell. So that we do not think it quite fair for Captain Tulloch to follow up a quotation from Mr. Cornish with the question "Can any people be found in Madras willing to buy manure of the value of 2½ millions of money?"

Thirdly, Mr. Cornish nowhere even suggests that the same number of urinals as latrines, would be required, nor do we suppose that he contemplated a shed for storing earth of the same size as his latrine. He might therefore fairly object to Captain Tulloch's including his own estimate of the cost of these buildings as correct items in the cost of dry conservancy.

As we before said we feel positive that Captain Tulloch had no intention of acting unfairly by Mr. Cornish, and of course it is possible that he may not take the same view of the matter as we do.

One more point we must notice. The Sanitary Commissioner has, of course inadvertently, led Capt. Tulloch into a calculation upon what we think erroneous data. In his Report on dry-earth conservancy (which it should be remembered has reference only to such Public Institutions as Barracks and Regimental Lines, Hospitals, Jails, &c.,) he says "the cost in Barracks, Jails, &c., when men using the latrines are in health would be about one-half of the above [*i. e.* for each European 8 Annas, and for each Native 3 Annas and 3 Pies per mensem]; say about 4 Annas per month per man, supposing the cost to be calculated on Dr. Blacklock's data." We suppose this should read "4 Annas per month for each European and 1 Anna and 8 Pies for each Native." Then Captain Tulloch might have said that considering the proportion of Natives to Europeans in Madras this sum may be taken as 2 Annas per head per mensem, and his total would then have been 129 instead of 258 lacs.

However we think Captain Tulloch has triumphantly shown the enormous cost of the dry-earth conservancy, and that even when it has duly done its legitimate work there remains a very large quantity of liquid sewage either to be carried away by sewers or to be allowed to stagnate and pollute the air and ultimately to sink into the earth. In our next number we shall have something to say on the latter subject.

PART III.

MEDICAL MISCELLANY.

No. 9.—*Primary and Secondary Amputation, for dry Gangrene of the leg, the Sequela of Fever; with Remarks.*

By John Shortt, M.D., F.L.S., M.R.C.P.L., General Superintendent of Vaccination, Madras.

Chokalingum, aged 18 ; caste, Malabar ; trade, servant.

11*th February* 1861, admitted. The patient was brought to the Civil Dispensary at 10 A.M. in a dooly, from the village of Cheyoor, a distance of thirty miles from Chingleput, with gangrene of the right leg, extending up to within three inches of the knee joint ; the lower half of the limb is perfectly black, the foot dry and hard, there is a well established line of demarcation separating the dead from the living tissues, and the tibia and fibular are denuded and bare to the extent of an inch, at which part they present a dirty white color. The joint is flexed on the thigh, and about the upper part of the knee slight redness and vesication are present.

The patient is a youth and rather emaciated in his appearance ; pulse 84 ; skin cool ; tongue foul ; bowels regular.

The following history has been gleaned from the patient himself. About two months ago he was seized with fever, which increased in severity until the tenth day, when the leg and foot became œdematous ; the fever now subsided, whilst the swelling increased apace and soon embraced the entire circumference of the leg, and encroached upwards, and after a while terminated in suppuration, which result, however, did not occur in the foot, when the swelling subsided. The discharge was scanty, purulent and offensive. In a short time, the patient observed that the toes of the right foot began to assume a blue color, and become painful to the touch, feeling cold and emphysematous ; the colour gradually increased and extended over the entire foot and leg, eventually growing black. As the mortification extended up the leg, the foot became dry and hard, and about a fortnight prior to admission, the separation between the living and dead tissues took place, with profuse ichorous discharge from the lower part which was extremely offensive. Had been taking native medicines without relief.

Ordered Ext. Opii. gr. i. at bed time with Chloride of Lime wash to the leg.

12*th.*—At 9 A. M. the patient was brought under the influence of chloroform, and the leg amputated at the knee joint. He stood the operation well though there was some loss of blood; small quantities of Port-wine and water were given him. The flap was brought together by silver wire suture, adhesive straps and bandage.

To have cold water applied. Diet,—Conjee and Mutton broth.

Vesp.—No oozing from stump, patient is comfortable. Pulse 100, soft; skin hot; bowels opened once early this morning prior to operation.

℞. Tinct. Opii ♏ xv.
„ Hyoscyami ♏ xv.
Mist. Camphoræ ℥iss.
M. ft. Haust, to be taken at bed time.

13*th.*—Slept the greater part of the night, feels thirsty this morning, has some heat of skin, pulse excited.

℞. Potass. Nitrat. gr. v.
Ant. Pot. Tart. gr. 1-16.
Aquæ ℥iss.
M. ft. Haust. To be taken three or four times a day.

14*th.*—States that he slept last night from a draught he took composed of

℞. Spts. Æther. Nitric. ʒss.
Tinct. Opii ♏ xx.
„ Hyoscyami ♏ xx.
Mist. Camphoræ ℥iss.
M. ft. Haust, at bed time.

Heat of skin continues. Pulse excited. The bandages looked soiled with blood, probably the result of the cold water application.

Cont. Nitre Mixture.

Vesp.—Has a good deal of heat of skin; bowels have not been moved since the 12th.

℞. Hydrarg. Chloridi gr. iii.
Pulv. Antim. Co. gr. iii.
M. ft. Pulv. at bed time.

15th.—The bandages being much soiled were replaced this morning. The stump looked well, some purulent discharge present. States that he slept part of the night and is feeling better.

To take port wine ℥iss, Quinæ gr. i at midday and to have immediately Ol. Ricini ℥ss, to be repeated if necessary in the course of three hours, and should heat of skin return to have ℥i. of compound saline mixture every two hours during the day.

Vesp.—Bowels opened once scantily from the castor oil, has a good deal of fever about him now.

16th.—Did not sleep during the night, is inclined to wander. Bowels have not been moved, has a wild look, and answers questions slowly. Pulse; 100, small; skin dry, tongue loaded and foul.

℞. Haust. Purgans. ℥iv.
To be given in two doses.

To have also a turpentine enema now. Head to be shaved and a small blister applied to the nape of the neck. Should his bowels be freely opened, to take the following in the course of the afternoon.

℞ Hydrarg. Chloridi gr. ii.
Pulv. Antim. Co. gr. ii.
Quinæ Disulph. gr. i.

M. ft. pil. To be taken with mucilage acacia every 3rd hour.

16th.—Has strong fever and is delirious; bowels opened.

Continue Pil.

To have ℥i. of port wine every hour.

17th.—Was slightly delirious during the night, appears more composed now—pulse full and hard, skin cool, bowels confined. To have a turpentine enema at 12 noon, and to take one ounce of arrack with an equal quantity of mutton broth every 2nd hour.

Vesp.—Continues delirious, the mutton broth makes him sick.

Continue.

18th.—7 A. M. Delirium continued through the night, is at present more collected; pulse 88, soft; skin cool; bowels open.

To have Quinæ gr. v. with ℥i. of port wine thrice to-day.

Omit Pills.

Vesp.—5 P. M. Continues collected; skin cool.

Continue.

19*th.*—7 A. M. Better, slept pretty well during the night. Stump is sloughy and the bone protrudes a little. It was dressed with warm resin ointment and lint.

Continue Quinine and wine.

20*th.*—7 A. M. Complains of nausea; stump continues in a sloughing state. Is more collected and expression of face clearer; bowels open.

To have an effervescing draught with 20 drops of Tinct. Hyoscyami now. Continue wine and quinine with warm dressings.

21*st.*—Countenance more cheerful, skin cool, pulse soft; was rather restless during the night; bowels open.

Omit medicine.

To take ℞. Quinæ Disulph. gr. iii., Arrack ℥ii.
M. ft. Haust. ter in die.

To have milk and plantains for which he asks.

22*nd.*—7 A. M. Better, the stump has sloughed a good deal, but the slough has not separated—no line of demarcation has yet taken place; a large bed sore has formed over the sacrum.

Continue medicine.

Vesp.—5 P. M. ℞ Tinct. Opii. ♏. xv.
„ Hyoscyami ♏. xv.
Mist. Camphor. ℥i.
M. ft. Haust, at bed time.

23*rd.*—Slept well the whole night, stump still looking sloughy. Cont. Quinine and Arrack with warm dressings to the stump.

Rept. Haust anodyne at bed time, to have Conjee or Broth (mutton.)

24*th.*—7. A. M. Slept well, appetite improving, sloughs coming away at the edges of the stump.

Omit Quinine.

To have arrack ℥ii with an equal quantity of Chiretta thrice daily.

Rept. Haust Anodyne.

25*th.*—Better, slept well, countenance cheerful and expressive of relief. The extent of slough can be obscurely defined. Bowels moved once during the night. The arrack intoxicates the patient.

To take ℥i instead of ℥ii of Arrack.

Decoct. Cinch. ℥ii. in a draught thrice daily in lieu of the chiretta. Cont. Haust Anodyne.

26th.—7. A. M. Is going on comfortably, the sloughs are loosening and the line of demarcation becoming more evident. Slept well, appetite improving, bowels open.

Continue medicine.

Has had nitric acid lotion with lint applied to the part and the stump wrapped with plantain leaves and bandaged.

27th.—7 A. M. A good deal of the slough from stump has come away, and the line of demarcation is now fully established; about three inches of the lower end of the femur protrude. The nitric acid lotion causes great pain. The bed sore is also cleaning, the left foot is swollen; the patient appears more cheerful and finds his appetite begin to return; did not sleep well during the night, bowels confined.

Continue medicine.

The nitric acid lotion to be weakened (ʒii to Oi) and to have ʒi. of Tinct. Opii in it. The anodyne draught to be increased in strength ♏. xx.

28th.—Sloughs from stump clearing away; bowels open.

Continue Medicine. Dry lint dressing.

1st March.—Did not sleep well from pain it would appear of the stump which is clearing, and so is also the bed sore; appetite increasing; bowels open.

℞. Arrack ℥i.
Ferri Sulph. gr. i.
Tinct. Cinch. ʒi.
„ Opii ♏. x.
Decoct. Cinch. ℥ii.
M. ft. Haust thrice daily.

To have a grain of solid opium at night instead of the draught and the following lotion with lint dressings.

℞. Acid. Nitric. Dil. ʒi.
Tinct. Opii ʒi.
Aquæ ℥i.
Ft. lotio.

2nd.—Stump cleaning and is otherwise improving.

Continue.

4th.—Improving slowly, stump cleaning, bowels regula

Cont. medicine. Warm turpentine dressing.

5th.—Better; stump clean and healthy, bed sore cleanin
The patient was yesterday laid on his left side, and to-da
turned over on his abdomen in consequence of a second so
on the left hip. The skin about the sides and nates w
washed with arrack, and the head, neck and arms smeare
with ol. olivæ.

Continue medicine.

To have a measure of Portwine every morning.

7th.—Continues to mend slowly.

Continue medicine.

9th.—Improves slowly, bedsores are clearing.

Continue medicine.

The Ferri Sulphas to be increased to gr. ii. with the a
dition of a grain of quinine to each draught.

11th.—Continues to improve slowly, bowels regular.

Continue.

13th.—The patient was this morning brought under t
influence of chloroform and the stump amputated to t
extent of four inches; the flaps were brought together b
silver wire sutures, adhesive straps and bandage. Conside
ing the patient's weak state, he stood the operation well,
lost a little blood from the great oozing subsequently fro
the stump, five small arteries requiring to be tied.

Continue medicine.

℞. Tinct. Opii ʒss.
Spts. Æther. Nit. ʒi.
Mist. Camph. ℥i.
Ft. Haust, at bed time.

14th.—Better. Continue medicine and dressing.

15th.—Idem.

18th.—The stump as well as the bed sores are well.

Continue medicine.

21st.—The patient is progressing favorably but slowl
bowels open. Omit medicine.

℞. Tinct. Cantharidis. ♏ vi.
Infus. Quassiæ. ℥ii.
Tinct. Hyoscyami ♏ vi.
Ft. Haust, thrice daily.
℞. Ext. Cannabis gr. i.
Quinæ Disulph. gr. ii.
Ft. Pil at bed time.

Omit Portwine. To have a measure of arrack daily.

1st April.—Continues to progress favorably, the sores are healing slowly. Since 21st of March he has been taking the following :

℞. Tinct. Cantharidis ♏ vi.
„ Hyoscyami ♏ vi.
Infus. Quassiæ ℥ii.
Ft. Haust, thrice daily.
℞. Ext. Cannabis gr. i.
Quinæ Disulph. gr. ii.
Ft. Pil at bed time.

Omit all other medicines : continue Portwine and arrack.

15*th.*—Improves slowly.

Continue. Omit Portwine.

20*th.*—Continues to mend slowly; sores healing.

Omit mist. cantharidis. To have in lieu Fish Oil ʒii. to be gradually increased to half an ounce.

Omit Ext. Cannabis and simple dressing.

4*th. May.*—The bed sores have nearly healed. Since the last few days the stump has quite healed, but two sinuses have opened out which discharge purulent matter. The patient is weak and greatly emaciated. Appetite and sleep good; bowels regular. Now takes ʒiii. of fish oil; to be increased to ℥ss. and to have a grain of opium at nights. Simple dressing.

4*th. June.*—Continues to mend slowly : omit medicine.

12*th. July.*—Well, discharged.

REMARKS.—This case is of considerable interest, from the fact that mortification is not a usual termination of fever, but at the same time, it should be borne in mind, that fever is a blood disease and is known to produce deleterious effects on that fluid, impoverishing and vitiating its quality, as well as retarding its force, and by causing venous stagnation in the extremities, it might account for the mortification that took place in this case, resulting in destruction of the limb. I was anxious to save as much of the limb as possible and, notwithstanding some trifling unfavorable symptoms then present, I amputated the leg at the knee joint, under the impression that as the line of demarcation was fully established, and the separation of the living from the dead tissue had taken place at the upper third of the leg, there was no fear, but unfortunately the fever returned with as much, if not greater, force than the first attack, and mortification of the stump ensued. From this secondary fever and mortification, the patient was so reduced in flesh and strength that I was long apprehensive of his fate. His skin became so irritable, that every prominent point subjected to pressure ulcerated and formed large bed sores, such as the sacrum, brim of the ilium and trochanters. The sore on the sacrum particularly was from 3 to 4 inches in diameter. After various expedients, I was enabled to extemporize a very serviceable though rude water-bed with a couple of puckally bags, and on this the patient was laid, even here it was the object to relieve the ulcerated parts of pressure; the patient before this had to be turned on his face and kept so for days together. The debility caused by the fever, the irritation from the bed sores, loss of blood from secondary amputation, &c., all tended to reduce the patient to so low an ebb that for days I despaired of his recovery; but, notwithstanding such formidable and untoward symptoms, with care and unremitting attention and the judicious administration of nutrients, tonics and stimulants, I had the happy satisfaction of seeing my patient make a good recovery eventually. Nothing perhaps is more trying, and calls for greater vigilance on the part of the Surgeon than the want of suitable appliances, and the personal attention to minutiæ so essential to ensure success in such cases. The limb was carefully examined, but nothing abnormal could be detected, the tissues of the foot and lower third of the leg were dry and hard, resembling in this respect those of a mummy.

No. 10.—*A Case of Poisoning by Belladonna, treated exclusively by the administration of Opium.* By Surgeon Major J. L. RANKING, Acting Garrison Surgeon, Trichinopoly.

ON the 6th October 1866, I was summoned in haste to a lady said to be in "high fever and delirious."

I found the patient in a state of delirium of a busy pleasurable character—much resembling the delirium of 'Delirium Tremens'—with a turgid flushed countenance, a tumid upper lip, a hot skin, and a rapid bounding pulse.

The pupils were widely dilated, the eye brilliant and defiant in its expression. There were evident phantasm and mental illusions. She could not be made to reply to questions, was incoherent, but conscious. There was incessant motion of the hands and attempts to seize some 'air drawn' objects.

I was informed that she had taken an overdose of Belladonna in the form of two pills by the mouth; and an injection of the dried leaves. The amount used in either case was not known. The lady had a knowledge of drugs and was, it appears, in the habit of taking Belladonna to relieve pain in the abdomen described to be like colic, but occurring at the menstrual periods, and therefore, doubtless, 'uterine colic' as it is sometimes termed. It was subsequently ascertained that the poisoning had not occurred in the way, at this time, communicated to me.

I determined at once to give undivided trial to the antidotal treatment by opium; and as "Sydenham's Laudanum" was in the house, 40 ♏ were administered with some difficulty—the difficulty being partly owing to the patient's opposition, partly to spasmodic closure of the jaws, and partly to some impairment of the powers of deglutition, for the voice was husky, and there was evident dryness of the fauces. After administration of the vinum opii, as the patient made constant attempts to get out of bed to busy herself about her usual occupations,—she was evidently in imagination instructing a class in needlework,—I directed her attendants to let her move about the room. The first dose of Laudanum (Sydenham's) was given at about 9-30 P.M. At 10-30 a second dose of 20 ♏ was given, and as the patient had now taken to her bed again, I directed a 3rd dose to be given at 11-30 and left; desiring that I might be called again at mid-night. I was not summoned, and visiting my patient in the morning found her in her right mind, and without the faintest recollection of what had passed, or any knowledge of my having been with her during the night.

She felt somewhat confused in mind and complained of dryness of the mouth and constriction of the fauces. The pupils were still largely dilated, the turgidity of the countenance and the humidity of the upper lip had passed off, and the facial expression was natural.

Her friends informed me that after taking the 3rd dose of the Laudanum at 11-30 she became so much more tranquil, that they did not think it necessary to disturb me. That the mental illusions slowly passed away, and that about 3 A. M. she fell asleep.

I now ascertained the precise circumstances under which the poisoning had occurred.

She suffered on the morning of the 6th from "pain in the bowels," and made two decoctions, one of Marsh Mallow, and the other of Belladonna leaves, fresh from France, the latter being intended as an injection.

She drank by mistake (as it is supposed) the latter for the former, taking "about a breakfast cup full" at about 5 o'clock in the afternoon or 4 hours before I was sent for, the decoction was made of ℥ii. of the dried leaves to a pint of water.

The symptoms of poisoning were well marked, and the antagonistic or antidotal effects of the opium were manifest. At any rate, no other remedial agency of any kind was employed.

I did for a moment contemplate administering an emetic of sulphate of zinc, which was in the house, but as I considered myself justified in giving the antidotal powers of opium a fair trial, I determined not to adopt any subsidiary measures which might obscure or overlie the influence of the remedy.

It may of course be said that the patient might have recovered without the opium—possibly so; but not I opine so speedily and completely. At any rate, the case is of interest, and serves to illustrate the mutual antagonism of Belladonna and Opium in the animal economy.

No. 11—*Cases of Rupture of the Spleen.* By A. Porter, Esq., M.D., Zillah Surgeon, Akola.

Case 1.—On the morning of the 3rd of August 1866, Lutchmun, the deceased, was drinking with some companions at a 'Kullah' shop, when a dispute arose:—blows were presently interchanged, and his opponent, Humut Khan, struck deceased over the splenic region with a bamboo, when he fell down and almost immediately expired.

The chief constable who saw the corpse shortly afterwards, testified to marks of blows being visible on different parts of the body, but more especially in the left loin.

The body was not brought for examination till the morning of the 6th August. It was then in an advanced stage of decomposition. No external wound or bruise was visible. The contents of the skull were not examined. The organs of the chest appeared healthy. On opening the abdomen, a large quantity of sepia-like fluid—changed blood—was found in the pelvis and about the spleen; of the latter nothing remained except the capsule which, from its size, gave evidence of the spleen having been considerably enlarged when the accident occurred, the rupture extended for some inches along the external surface near its anterior border; the other organs of the abdomen appeared healthy.

Case 2.—This is the case of a young man, by name Sewram Wd Raghojee, who, while working in the field, suffered compound fracture of the ring finger of the left hand, either by accident or, as was suspected, in a quarrel with his father. It was said to have been caused by the father striking at a bullock with an iron scraper, and hitting his son's finger instead; no other hurt is said to have been received. This occurred on the 3rd of August, and Sewram remained at home applying remedies till the 6th, when he became very ill, and complained of pain in the neck; he continued getting worse till the evening of the 8th, when he died. No more definite account of the symptoms could be elicited, but the cause of death was probably Tetanus.

I examined the body on the morning of the 9th of August. Except the compound fracture of the left ring finger, there was no other mark of violence on the body. On opening the skull the pia mater was found congested, the brain substance was hard and presented red spots on section, the ventricles contained a little bloody serum. The lungs were healthy. The right side of the heart was gorged with blood, as were also the veins of the neck; there was about an ounce of serum tinged with blood in the pericardium. On opening the abdomen a quantity of dark red blood was found in the pelvis and behind the spleen; the spleen was slightly enlarged, congested, and much softened behind, where there was a rupture near the hilus of about half an inch in length. The other organs appeared healthy, except the kidneys, which were congested.

The rupture of the spleen in the latter case might be accounted for by supposing that the spleen, having been already softened by inflammation (arising perhaps from a blow received at the time of the other accident) had been ruptured by pressure from a tetanic spasm of the diaphragm and abdominal muscles. Among other things the freshness of the body as well as the appearance of the blood effused (which was more or less separated into clot and serum) precludes the idea of the softening being post mortem, and of the rupture being caused by rough handling after death.

No. 12.—*Paralysis; Exophthalmos, Amaurosis; Epileptic attacks; Death. Large Scrofulous tumour of the brain.* By Asst. Surgeon W. N. Chipperfield, Acting Physician, General Hospital, Madras.

Case reported by Student Daniel Thomas Baker.

Juggiah, a Hindoo, aged 27 years, a Private in the 23rd Regt. C. L. I.

2*nd February* 1866.—Admitted into the General Hospital, by transfer from the Eye Infirmary, with the following statement of his case.

"*Detached Retina. Cerebro-spinal Amaurosis.*

"24*th June* 1865.—*Ophthalmoscopic Examination. Left Eye:*—optic disc seen very indistinctly, outline cannot be readily made out; position indicated by large vessels; surface of the disc obscured by a whitish deposit; the disc cupped and anæmic, retina opaque, the vessels small and traced with difficulty. Retina close to the optic disc raised in folds from sub-retinal effusion. *Right Eye* :—Same pathological condition as in the left eye. Retina of both eyes totally insensible to light.

"The disease is one of detached retina combined with cerebro-spinal amaurosis. As this patient is suffering from cerebro-spinal paralysis, I recommend his being transferred to the General Hospital, pending the final disposal of his case.

"Unfit for any further service.

"(Signed) G. SMITH, M.D.,
"*Superintendent Eye Infirmary.*"

This patient presents the characteristic attitude of an amaurotic person. The globes of the eyes are extremely prominent, the eyes fixed, the axes parallel and directed straight-forwards; pupils widely dilated. He is in a condition of imperfect general paralysis, but is able to walk with the aid of a guiding hand. Sensation is not impaired, at least no evidence of anæsthesia can be obtained. He has a great tendency to sleep, and is with difficulty aroused. Holds no converse with any one in the ward, but when thoroughly aroused answers questions slowly and deliberately; sometimes he gives a curt reply and immediately falls asleep again. The excretory functions are duly performed, and he intimates to his attendant when he requires aid to go to the latrine. Pulse full, soft; Tongue clean. This man is said to have been in the habit of consuming large quantities of opium for several years.

Full diet. To be carefully watched.

17*th February.*—No change. Eats his food with avidity sitting upon his cot and feeding himself.

4*th March.*—Has continued much the same, until last night, when he passed his urine involuntarily, and to-day he is passing both urine and fæces without his knowledge. Cannot feed himself now, has lost guiding power over his hands.

To have a blister applied from nape of neck to lower part of dorsal region of spine.

14*th.*—Blister healed: in much the same state.

℞. Syrup Ferri Iodidi ♏ xxv. thrice daily.

16*th.*—Is a little improved; no longer passes his stools involuntarily, though the urine is frequently so passed. But the general paralysis is rather more marked. Is a little inclined to talk. Has taken a fancy for sitting out in the verandah, and the breeze has induced a slight conjunctivitis.

Continue Syrup.
℞. Aluminis Sulph. gr. iv.
Vini Opii ♏ xx.
Aquæ Font. ℥ ii.
M. ft. Lotio, for the eyes.

To have the Electro-Magnetic machine applied every day.

20th.—Conjunctivitis well. Somewhat improved in general health. The muscles are thrown into action on the application of the Battery.

Continue Treatment.

1st April.—Improving; the muscles have regained a great deal of their former energy. Is more cheerful; sits up and feeds himself, and converses with his attendant.

Continue.

20th.—Is rapidly gaining flesh and strength. Has lost much of the torpidity and stupidity which is so characteristic of cerebral disease; and is tolerably active and sensible. Would require no assistance at all, were his retinæ sensible to light. Pulse full, strong, regular. Skin normal. Bowels regular. Appetite good.

Continue.

2nd May.—Fell down in an epileptic fit yesterday when walking across the ward. Has now recovered from the somnolent effects of the fit. Is apparently enjoying his breakfast.

Continue.

20th May.—Not quite so well. Has a great tendency to sleep, and is getting morose and sullen again. General health appears good.

Continue.

1st June.—Fast falling into his old state of torpor and somnolency. Is getting quite indifferent to things about him. Sleeps nearly the whole day and night, but is easily roused. When asked a question hesitates a little before he replies, and sometimes his answers are very curt. Excretory functions natural. Appetite remains good.

10th.—No change for the better. Memory fast failing him, and no doubt the brain lesion is rapidly advancing. Paralysis marked, but no anasthesia. Is not easily aroused. Answers questions rationally but hesitatingly.

Blister to nape of neck.

Omit Syrup.

11*th*.—Blister has not aroused him, is evidently rapidly becoming worse. Cannot feed himself, but takes his food well. Pulse full, very soft. Stools and urine passed unconsciously.

20*th*.—Is fast falling into a state of coma. Had another epileptic fit last night. Is with the greatest difficulty roused ; does not speak. Some difficulty of swallowing.

To be well supported with fluid food.

1*st July*.—Getting worse day by day. Cannot swallow. To be supported by enemata of beef tea with a little wine.

10*th*.—Is now in a state of perfect coma.

20*th*.—Has lingered on until this morning at 5 A.M. when he expired.

Necropsy.—Six hours after death.

Body.—Well nourished. Eyes very prominent and not covered by the lids. Bridge of nose somewhat sunken.

Head.—On removing the calvaria, the dura mater covering the anterior lobes of the brain was found very dark and opaque. At the inferior part of the anterior lobes there was such firm adhesion of the membranes to the brain substance that the former could not be separated without the latter tearing. On endeavouring to remove the brain its anterior lobe was found firmly adherent to the base, and by a little traction it was separated, and there was found at the line of separation an irregular ragged surface, the margins of which were composed of dense, hard, yellow tissue. Upon examining the anterior fossa, a large mass of similar tissue was found occupying the centre of its site. This proved to be a scrofulous tumour, as large as a medium sized lime. When it was removed a remarkable condition of the fossa was found. The outer two-thirds of each orbitar plate of the frontal bone were in their normal position, but the inner thirds, with the crista galli process and cribriform plate of the ethmoid, had disappeared, and by the absorption of these and the greater part of the central mass of the ethmoid a deep sulcus had been formed, the lateral

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No. 13.—*Madras Mortuary Report for the Third Quarter of* 1866. By W. ARNOLD SMITH, M. D., Officiating Secretary, Sanitary Commission.

THE third quarter is, as a general rule, the most disagreeable as well as the most unhealthy season of the year in Madras, a reputation which has been fully upheld during the period under review, by the very large increase in the mortality which has taken place.

The number of deaths registered from all causes has amounted to 4168, being an increase on the mean of the corresponding quarters of 10 previous years of 1266.

1861	4291
1862	3553
1863	2497
1864	2450
1865	3226
Mean	3203

The average number of deaths during the third quarter of 5 previous years, as shown in the margin, is 3203; there has therefore been an increase during the past quarter of nearly a thousand deaths, or to be accurate, 964.

Contrasted with the first and second quarters of the current year, there has been an increase on the former period of 1208 deaths, and on the latter 1242.

There has been a larger mortality amongst the European and East Indian communities than usual; 80 deaths have occurred amongst the former, and 153 amongst the latter, being an increase of 47 and 99 deaths respectively on the 5 year average.

Nearly half the deaths (33) amongst the Europeans are children of the military and civil residents. Of the remaining deaths amongst the adult population, 21 are civilians, 17 military, and 9 seamen.

Of the deaths amongst the East Indians, more than half (77) are those of young children.

Taking the population at 4,50,000, as has been done in previous reports, the death-rate per annum during the past quarter is 36 per mille.

The increased mortality noted above has been almost entirely due to miasmatic diseases. During the third quarter of 5 previous years, the average mortality from this order of diseases has been 1733, and that of deaths from other causes 1469. During the past quarter, however, there have

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1861	544
1862	625
1863	521
1864	498
1865	579
Mean	553

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1861	309
1862	290
1863	201
1864	227
1865	305
Mean	266

DYSENTERY.—The death
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1861	369
1862	338
1863	283
1864	257
1865	281
Mean	305

During the 5th week, or that ending August 3rd, the deaths fell to 5.

1861	162
1862	75
1863	16
1864	3
1865	14
Mean	54

SMALL POX.—The deaths from small pox do not show such a marked decrease on the average as has been noticed on previous occasions; but still the register shows a decrease of 25 deaths on the 5 year average, the mortality having been 29.

One of these deaths occurred in a European 19 years of age at the General Hospital.

There have been 24 deaths amongst the Hindoo and 4 amongst the Mahommedan population.

During the month of August, the wave line of deaths from this cause, runs almost parallel with that of the average. In the 7th week ending August 17th, 5 deaths are registered.

CHOLERA.—The deaths registered from cholera have numbered 1655, giving an increase of 1102 to the average mortality of the past 5 years.

1861	1568
1862	590
1863	15
1864	139
1865	455
Mean	553

The deaths from this cause, as compared with those registered during the first and second quarters of the current year, show an increase of 1386 and 1335 respectively.

During the whole of last quarter, cholera was never absent from Madras; but it was not till the 2nd week of that under review, that a marked increase took place at any one time in the mortality from this cause.

In the week ending the 13th July, the deaths suddenly rise from 40 to 157, and during the rest of the quarter never once fall below a hundred per week.

A glance at the diagram shows better than can be described the increment and decrement of the mortality during the past thirteen weeks.

The increased number of deaths took place in Peddoo Naick's Pettah, Triplicane, Chintadrepettah, Choolay, Pursewalkum and Washerman's Pettah. Five out of these localities, as shown in the margin, are those which continued to suffer most severely throughout the quarter, and alone contributed

Peddoo Naick's Pettah	244
Triplicane	117
Chintadrepettah	132
Pursewalkum	186
Washerman's Pettah	144
	823

more than half the total number of deaths from ch registered.

To those acquainted with these portions of Madras surprise will be excited by the notoriety they have att from the constant prevalence of miasmatic diseases, an the excessive mortality which occurs in them during ch epidemics.

Chintadrepettah suffered most severely during the m of July, when 95 deaths were registered. As many deaths occurred in a single day, viz., the 12th of July, 1 10 deaths were also registered on the 11th and 16th same month.

This locality is undoubtedly one of the most unhe districts in the whole of Madras, a fact which may to extent be accounted for by its being encircled by a lo the Cooum river, a geographical feature of a most obje able nature, when looked at in a sanitary point of view one which is peculiar to this portion of the town.

During the season of the year when the Cooum is lowest, the people in the neighbourhood are in the ha collecting shell-fish from its bed, for the purpose of bu the shells into lime.

In doing this the mud of the river is stirred up, tog with its accumulated deposits of sewage, and mephitic o set free; thus poisoning the atmosphere of the imm neighbourhood; and generating a fertile source of mias diseases.

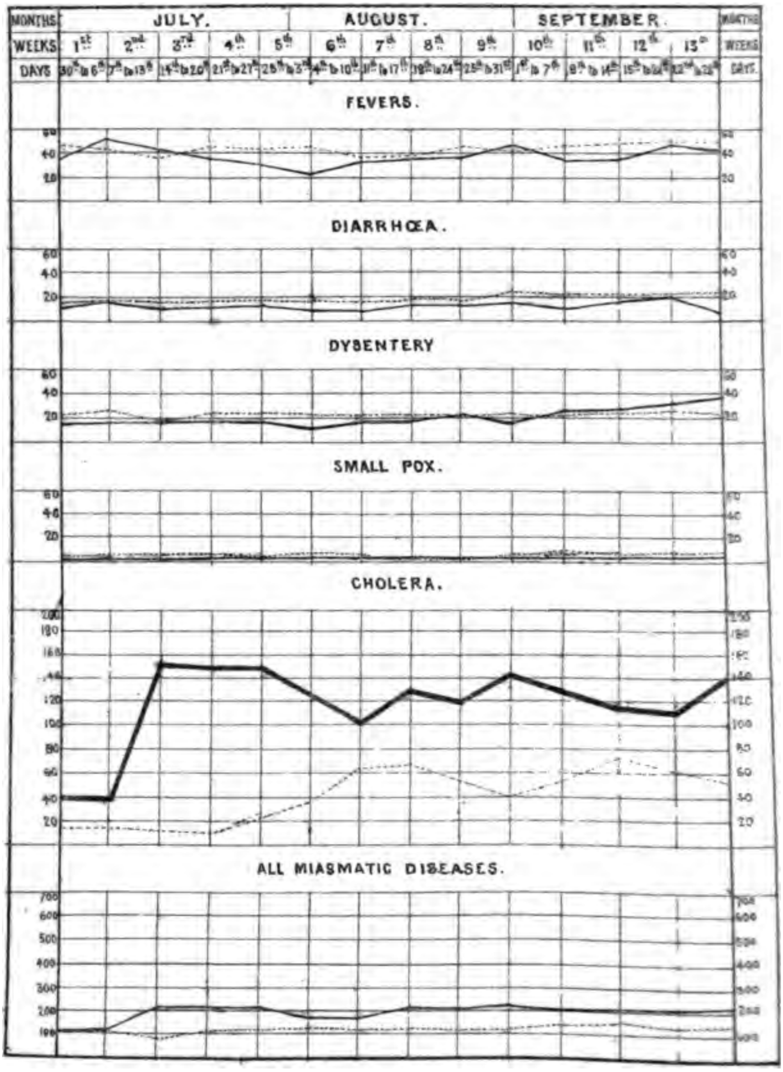
The shells are heaped up on the banks of the river, their contents, which have been only partially eaten, ar to putrify in the sun. It is to this additional source o ease that Chintadrepettah is peculiarly exposed, while it s in common with many other places, and especially noted above, from bad drainage, and impure water suppl narrow, ill-ventilated, overcrowded streets.

The meteorological condition of Madras during the quarter will be best understood by an inspection of the

Atmospheric Pressure.—There have been no ve markable changes in the rise and fall of the Barometer d the quarter. The mean atmospheric pressure has been 2 reduced to 32° F., which is about the usual average. A fall took place during the 2nd and 7th weeks, bu wave line keeps very much to the usual average.

Temperature.—The temperature throughout the q has been greater than the average, and the wave

DIAGRAM SHOWING THE MORTALITY FROM MIASMATIC DISEASE IN MADRAS,
DURING THE 3RD QUARTER _ 1866.



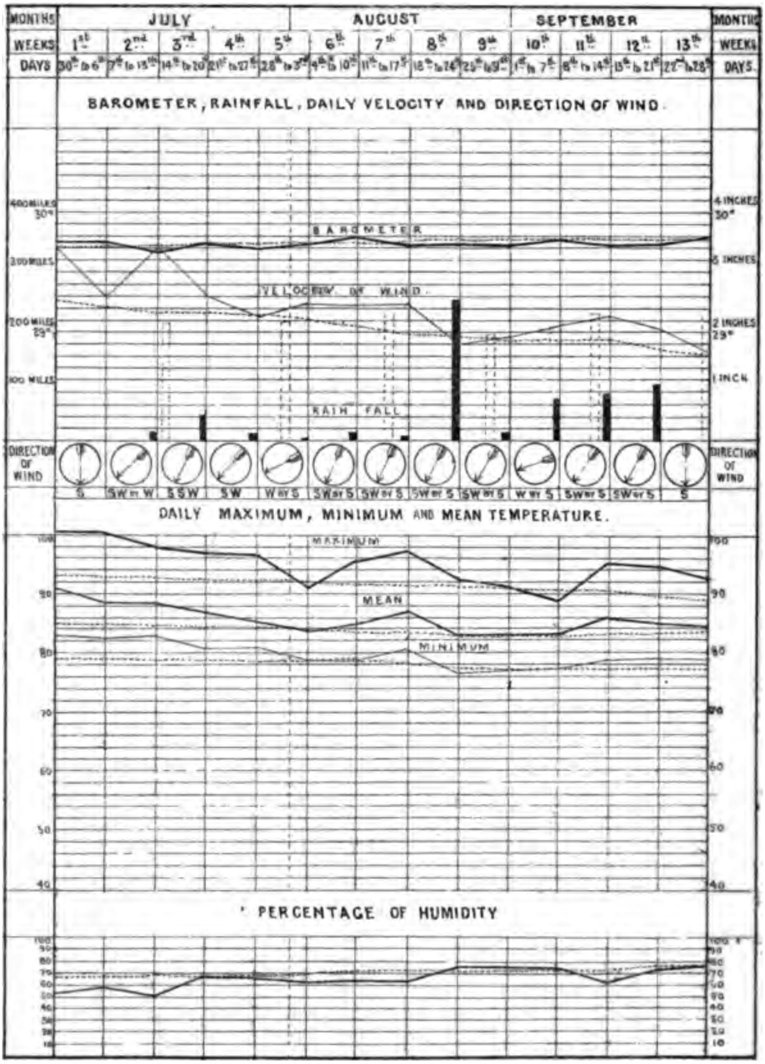
N.B. The total Mortality from each disease during each week is plotted on the perpendicular lines which represent these periods. The horizontal dotted wave lines show the average mortality from each disease for the previous five years.

Alexr Barren, Lithogr Madras, 1866

Madras Quart. Journ. of Med. Science

DIAGRAM SHOWING THE METEOROLOGICAL CONDITION OF MADRAS,

DURING THE 3RD QUARTER _ 1866.



N. B. The mean weekly Meteorological elements are plotted on the perpendicular lines. The dotted wave lines show the bimonthly average for twenty years from observations kept at the Madras Observatory.

Alexr. Barren Lithogr. Madras 1866

mean temperature only once descends below the 20 year average, viz., in the 5th week, ending August 3rd.

The mean temperature for the thirteen weeks has been 85·4° or about 2 degrees higher than the average.

The mean maximum has been 94·8° F., and the mean minimum 79·5°; being 3·8° F. and 1·6° F. respectively, higher than the average.

The temperature falls rapidly to the end of the 5th week of the quarter, when it takes a sudden rise during the 7th week, or that ending August 17th. It falls to the 10th week, suddenly rises during the 11th, and again falls slightly to the end of the quarter. At these periods changes in the increment and decrement of mortality are noticed in this report.

HUMIDITY.—The percentage of humidity has averaged 67 during the quarter, being 4 degrees below the mean.

During July and August the wave line of Humidity runs below the average, and only rises above it during the 9th and 10th weeks, after which it again falls.

RAINFALL.—As in the last quarter so in this, the rainfall has been below the average.

The average rainfall for the third quarter is 12·05 inches. During that which has past, only 7·96 inches have been registered. There is therefore a deficiency of 4·09 inches.

The total rainfall since the 1st of January 1866 is 8·96 inches, which is 10·73 below the average.

It will be observed from the chart that what rain has been registered during the past quarter, fell within the last six weeks, heavy showers occurring during the week ending the 24th August.

VELOCITY AND DIRECTION OF THE WIND.—The direction of the wind has, as usual at this season of the year, fluctuated between the South and Westerly points.

Its daily velocity has averaged 213 miles, which is 32 miles greater than the average.

It will be observed that the mean line of velocity steadily falls throughout the quarter. The greatest average daily velocity took place during the week ending July 13th, when it rose to 302 miles, after which it suddenly fell to 216 during the week ending July 27th. A sudden decrease in the movement of the air took place during the 8th week ending August 24th.

Amongst the various causes which may have influenced the mortality of the past quarter, to one meteorological element must be attributed a large proportion of the increase in sickness, and that is, the deficiency in rainfall experienced not only in the Madras District, but also generally throughout the Presidency.

The universal drought by leading to the destruction of the crops, and to the deaths by starvation of thousands of heads of cattle, has had the effect of raising the prices of nearly all the necessaries of life to almost famine rates, and, as a natural consequence, the old, the young, the infirm, and in fact all those classes of the population who have been unable to work, if they have not been actually starved, have been predisposed to disease and death, by a reduced amount of food.

The price of labor has not risen with the price of food, and pestilence has gone hand in hand with this (to the poorer classes) practical scarcity of grain.

In examining the chart of mortality from miasmatic diseases, it is to be observed that there are periods at which the wave line of deaths has shown marked changes in its course.

During the first week, in which no marked meteorological changes are noticed, except a sudden decrease in the rate of movement of the air, all the deaths, excepting cholera, show an inclination to rise; but after this time there is a general fall to the 5th week ending August 3rd, in the wave line representing the deaths from the principal miasmatic diseases, cholera being again exceptional.

In the meteorological chart, it is to be observed that this change is exactly that followed by the wave lines of temperature. Miasmatic diseases culminate about the 7th week ending August 17th, so does the wave line of temperature. Other similarities in the curves of these lines may be traced towards the end of the quarter, as has also been noticed in previous reports; but at present it would be unsafe till more extended observations have been made, to attempt any theoretical deductions on the subject in question.

It is interesting to observe how the wave line of cholera mortality seems to run on its course, apparently entirely independent of all meteorological changes. It rapidly ascends in the second week, while other diseases are falling, and does not descend till the 6th week ending August 10th, that is, just a week later than the turning point which has characterized the increment and decrement of other diseases generally, and which has already received notice.

Table Showing the Deaths in Madras, Third Quarter of 1866.

	Europeans.		East Indians.		Hindoos.		Mahomedans.		Total.		General Total of both sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Fevers...	7	0	6	5	208	223	26	25	247	253	500
Diarrhœa	0	5	5	4	65	67	18	8	88	84	172
Dysentery	2	2	1	6	106	128	21	19	130	155	285
Small-pox	1	0	0	0	15	9	2	2	18	11	29
Cholera...	19	13	29	25	660	689	106	114	814	841	1655
Other Miasmatic diseases	0	0	0	1	13	9	3	0	16	10	26
Total Miasmatic...	29	20	41	41	1067	1125	176	168	1313	1354	2667
Total of all other diseases	22	9	33	38	607	509	154	129	816	685	1501
Total...	51	29	74	79	1674	1634	330	297	2129	2039	4168
Mean Mortality of 10 *Third Quarters, from* 1856 *to* 1865.											
Miasmatic diseases	13·1	5·4	15·1	20·3	675·4	624·3	107·2	106·2	810·8	756·2	1567·0
Other diseases	16·0	7·0	25·2	25·5	546·4	499·4	113·4	101·5	701·0	633·4	1334·4
Total...	29·1	12·4	40·3	45·8	1221·8	1123·7	220·6	207·7	1511·8	1389·6	2901·4
Increase	38·5		66·9		962·5		198·7		...		1266·6
Decrease	...		...		...		...		...		...

Table showing the Mortality from Miasmatic Diseases in the last Thirteen Weeks as illustrated by the accompanying diagram.

	July 6th.	July 13th.	July 20th.	July 27th.	Aug. 3rd.	Aug. 10th.	Aug. 17th.	Aug. 24th.	Aug. 31st.	Sept. 7th.	Sept. 14th.	Sept. 21st.	Sept. 28th.	Total.
Fevers	51	43	36	31	23	33	36	38	44	33	37	47	42	494
Diarrhœa	17	11	12	14	9	9	14	11	17	11	18	20	8	171
Dysentery	17	18	18	18	11	19	18	22	18	23	27	31	39	279
Small Pox	1	1	2	4	2	3	5	4	2	1	1	1	2	29
Cholera	40	157	152	150	129	103	128	121	144	130	118	111	140	1623
Other Miasmatic diseases	3	4	2	6	0	1	2	4	0	2	3	0	1	28
	129	234	222	223	174	168	203	200	225	200	204	210	232	2624

Average of the Corresponding Weeks for 5 previous years.

Fevers	41·2	37·6	43·4	41·0	42·6	37·4	39·2	42·6	41·8	45·6	48·0	48·4	48·2	557·0
Diarrhœa	16·2	19·4	18·8	19·0	19·4	18·4	19·4	18·8	24·2	21·4	22·8	22·0	24·4	264·2
Dysentery	24·0	19·2	21·0	22·2	22·6	21·4	21·6	22·4	23·0	21·8	27·2	29·4	25·2	301·0
Small Pox	4·2	4·0	4·6	3·2	4·6	4·4	4·0	2·4	3·4	6·0	4·4	4·0	3·8	53·0
Cholera	17·0	14·0	11·6	22·2	35·8	64·4	69·4	56·0	40·6	53·6	74·8	61·6	54·4	575·4
Other Miasmatic diseases	4·0	2·6	4·2	3·2	5·2	4·2	3·0	4·2	2·6	3·8	3·4	2·6	2·0	45·0
	106·6	96·8	103·6	110·8	130·2	150·2	156·6	146·4	135·6	152·2	180·6	168·0	158·0	1795·6

Mean Meteorological Observations for the past 13 *Weeks.*

	July 6th.	July 13th.	July 20th.	July. 27th.	Aug. 3rd.	Aug. 10th.	Aug. 17th.	Aug. 24th.	Aug. 31st.	Sept. 7th.	Sept. 14th.	Sept. 21st.	Sept. 28th.	Total.
Barometer reduced to 32° F.	29·753	29·686	29·704	29·704	29·737	29·807	29·734	29·745	29·756	29·782	29·752	29·761	29·809	29·749
Mean Maximum Temperature	100·9	98·3	97·7	96·8	91·9	95·5	97·0	92·5	91·5	89·0	94·7	94·3	92·7	94·8
Do. Minimum do	82·8	82·7	80·3	80·9	78·8	78·6	80·3	76·4	77·5	77·9	79·2	79·4	78·7	79·5
Mean Temperature............	88·6	88·4	87·0	85·7	83·7	85·1	86·5	83·4	83·4	82·7	85·6	85·3	84·7	85·4
Do. Humidity................	59	54	66	66	64	66	65	75	75	73	67	70	72	67
Prevailing Wind..............	S.	S. W. by W.	S.S.W.	S. W.	W. by S.	S. W. by S.	S. W. by S.	S. W. by S.	S W. by S.	W. by S.	S. W. by S.	S. W. by S.	S.	S. W. by S.
Mean Velocity in Miles.........	245	302	247	216	228	222	24	160	176	193	203	188	14·3	21·396
Rainfall..........................	0	0·18	0·41	0·83	0·07	0·70	0·17	2·35	0·93	0·69	0 79	0·84	0	7·96

Table showing the Mean half Monthly Meteorological condition of Madras for 20 *years past.*

	Half Month ending 15th July.	Half Month ending 31st July.	Half Month ending 15th August.	Half Month ending 31st August.	Half Month ending 15th September.	Half Month ending 30th September.	Total.
Barometer reduced to 32°F.........	29·708	29·721	29·749	29·753	29·763	29·796	29·748
Mean Maximum Temperature......	92·6	91·9	91·6	90·3	90·5	89·1	91·0
Do. Minimum do	78·8	78·4	78·1	77·7	77·8	77·1	77·9
Mean Temperature..................	84·3	83·9	83·5	82·8	82·9	82·2	83·2
Mean Humidity......................	69	69	71	73	72	76	71
Prevailing Wind.....................	S. W.	S. W. by W.	S. W. by S.	S. W.	S. W. by S.	S. S. W.	S. W.
Mean Velocity in Miles..............	215	207	182	175	168	140	181
Rainfall............	1·93	1·98	2·08	1·78	2·08	2·20	12·05

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of July* 1866.

July 1866.	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMA
		Observed extremes.		Daily means.			Prevailing direction.	Daily velocity.		
		Maxim.	Minim.	Dry.	Wet.					
	Inches	°	°	°	°	per cent.		Mls.	Ins.	
1	29·766	101·2	83·5	89·2	76·6	57	S.	267	....	Fine, with passing cl
2	29·786	97·8	81·7	89·4	77·0	58	S. S. E.	209	....	Passing clouds.
3	29·786	100·3	84·2	89·9	77·5	58	S. by E.	225	....	Cloudy.
4	29·746	102·2	80·9	87·9	76·4	59	S. by W.	265	....	Chiefly overcast.
5	29·699	101·0	83·3	88·1	76·2	58	S. S. W.	275	....	Hazy clouds.
6	29·726	101·3	83·3	86·5	76·7	65	S.W by S.	249	....	Cloudy.
7	29·719	97·9	81·9	88·5	77·0	60	S.	310	....	Passing clouds.
8	29·688	97·3	82·7	89·9	76·3	54	S. by W.	315	....	do.
9	29·716	100·1	82·0	84·8	76·4	69	S. W.	272	0·17	Cloudy. Shower a
10	29·674	98·1	80·9	89·0	73·1	47	W.	304	....	Chiefly overcast.
11	29·631	96·9	84·0	89·6	73·0	46	W. by N.	313	....	Overcast.
12	29·666	95·9	83·1	87·9	72·2	47	W. by N.	340	....	do.
13	29·711	102·1	84·2	89·4	75·3	53	W. S. W.	262	0·01	Passing clouds. Light s 6½ P.M.
14	29·757	101·1	83·3	88·3	76·7	59	S. S. W.	231	....	Fine day ; cloudy ni
15	29·739	98·4	81·6	87·1	77·9	66	S.	218	0·07	Rain at ½ A. M. Chiefly
16	29·693	192·2	76·0	84·0	78·7	79	S.	255	0·34	Rain before sunrise. cloudy.
17	29·707	91·8	78·9	84·9	78·2	75	S. by W.	210	....	Cloudy.
18	29·703	99·7	80·8	87·8	78·1	65	S. W.	249	....	Fine, with passing cl
19	29·708	100·7	80·8	89·3	76·0	55	W. S. W.	257	.....	Passing clouds.
20	29·691	100·2	80·7	87·3	76·2	61	S. W	311	......	Cloudy.
21	29·676	100·1	83·3	84·8	76·7	70	S. W.	285	0·11	Cloudy. Shower at
22	29·674	96·5	81·0	86·2	76·2	64	SW by W	210	....	Cloudy.
23	29·709	100·5	83·4	88·0	76·3	50	S. W.	234	....	Chiefly overcast.
24	29·714	100·0	83·8	88·9	77·0	59	SW by W	225	....	Cloudy.
25	29·704	94·0	80·0	84·7	77·3	72	S W by S	203	0·30	Rain at 1 A. M. and Thunder and lightn
26	29·708	92·0	76·6	82·7	75·8	73	S. W by S	165	0·09	Rain before 1 A.M. O
27	29·740	94·7	78·4	84·8	74·7	63	W. by S.	187	0·33	Overcast. Rain from 5
28	29·733	92·0	78·8	83·6	74·3	65	W. S. W.	235	....	Overcast.
29	29·777	92·3	77·6	84·6	74·5	63	W. by S.	220	0·02	Overcast, with slow
30	29·758	88·2	79·7	81·4	73·1	68	W. by N.	260	0·03	Overcast. Showers at 3
31	29·721	88·4	77·4	83·1	74·4	67	W. by N.	169	....	Overcast.

The Standard Barometer and Thermometers are read at 10 A. M., 4 P. M. and
and the Daily Means are obtained by the application of hourly corrections, deduc
twenty years' observations. The Cistern of the Barometer is 27 feet above the le
Sea, and the Receiver of the Rain-gauge is three feet from the ground. The W
Rain registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Ast

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of August,* 1866.

Aug	Barometer reduced to 32°.	Standard Thermometers.				Percentage of humidity.	Wind.		Depth of rain.	GENERAL REMARKS.
		Observed extremes.		Daily means.						
		Maxim.	Minim.	Dry.	Wet.		Prevailing direction.	Daily velocity.		
	Inches.	°	°	°	°	per cent.		Mls.	Ins.	
1	29·713	88·8	77·8	81·7	72·7	65	NWbyW	213	.....	Overcast.
2	29·678	96·1	79·1	85·6	73·8	58	W. S. W.	246	0·02	Overcast. Shower at 6½ P.M.
3	29·737	97·2	81·0	85·7	76·0	65	S. by W.	256	....	Chiefly cloudy.
4	29·813	97·4	79·0	86·0	76·2	65	S.	186	.....	Passing clouds.
5	29·868	96·1	81·5	86·7	78·5	70	S.W.byS.	196	0·25	Cloudy. Rain chiefly about [11 P. M.
6	29·882	86·3	76·9	82·0	75·5	74	S. W.	161	......	Overcast.
7	29·862	91·5	77·7	84·6	75·0	64	W. S. W.	178	.. ....	Chiefly overcast.
8	29 776	97·0	76·9	84·6	75·1	64	S. S. W.	219	....	Passing clouds.
9	29·721	99·8	76·7	86·8	75·3	59	S. W.	287	....	Fine, with passing clouds.
0	29·724	100·1	81·6	85·2	75·6	65	S.W.byS.	329	0·45	Passing clouds. Rain from 4½ to 7½ P.M.
1	29·704	95·9	79·0	85·4	76·1	66	S. by W.	246	....	Fine with passing clouds.
2	29·692	99·1	81·2	88·1	75·4	56	W. by S.	296	0·02	Passing clouds. Showers at 8½ and 10½ P.M.
3	29·684	96·2	82·5	87·8	77·7	64	SW byW	294	0·02	Overcast. Light rain at 7¾ P.M.
4	29·720	98·2	80·4	85·3	76·3	67	S.W.by S	259	0·09	Chiefly overcast. Light showers after 4 P.M.
5	29·778	98·3	78·6	85·0	77·1	70	S S. W	225	0·04	Chiefly cloudy. Showers at 5¾ P.M.
6	29·774	95·7	79·9	86·8	77·0	65	S. by W.	203	....	Fine, with passing clouds.
7	29·783	95·6	80·8	87·0	77·6	66	S. by E.	198	....	Fine, with passing clouds.
8	29·802	93·8	77·6	85·3	76·5	68	S.	182	....	Passing clouds.
9	29·773	95·6	75·2	85·1	75·7	66	W. S. W.	165	0·06	Rain at 5 A.M. Chiefly cloudy.
0	29·737	96·7	80·6	86·4	75·9	62	S.W.byS.	141	....	Cloudy.
1	29·726	94·5	78·4	83·8	77·2	75	S. S. W.	169	0·10	Shower at 7½ A.M, and 4½ P.M. Cloudy.
2	29·744	89·7	74·0	81·3	76·7	82	W. S. W.	198	0·82	Rain between 2 and 9 A.M. Chiefly overcast.
3	29·734	88·9	72·2	80·9	77·8	88	S. W.	139	1·06	Rain from 4 to 8 A.M. Cloudy.
4	29·699	88·3	77·0	81·0	77·3	85	S. by W.	126	0·31	Overcast. Rain commenced at 11½ P.M.
5	29·693	87·0	74·6	80·7	76·4	83	SW by W	163	0·42	Overcast. Rain until 7 A.M. and after 10½ P.M.
6	29·747	90·1	75·5	82·2	76·6	78	SW by W	196	0·27	Rain until 4 A.M. Cloudy.
7	29·750	93·9	77·6	82·3	75·7	74	S. W.	233	....	Chiefly cloudy.
8	29·703	91·8	76·9	83·9	76·9	73	S.W.by S	186	0·05	Chiefly cloudy. Shower at 3¾ P.M.
9	29·756	94·0	79·8	85·2	77·2	70	S. S. W.	179	....	Passing clouds.
0	29·817	91·4	79·5	85·2	77·9	73	S. by E.	139	0·10	Partly fine. Rain at 5 P.M.
1	29·826	92·0	78·8	84·5	78·3	76	S. S. W.	133	....	Chiefly cloudy.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M. and 10 P.M.,
the Daily Means are obtained by the application of hourly corrections, deduced from
nty years' observations. The Cistern of the Barometer is 27 feet above the level of the
, and the Receiver of the Rain-gauge is three feet from the ground. The Wind and
n registered are for the current civil day—from midnight to midnight.

N. R. POGSON, Government Astronomer

METEOROLOGICAL RES

Register, for t

September 1866.	Barometer reduced to 32°.	Standard Thermometers.			
		Observed extremes.		Daily means.	
		Maxim.	Minim.	Dry.	Wet.
	Inches.	°	°	°	°
1	29·810	84·0	79·1	82·2	74·
2	29·804	84·3	76·9	79·7	74·
3	29·768	84·8	77·9	80·7	74·
4	29·727	91·3	78·0	82·3	74·
5	29·765	89·6	76·7	83·6	75·
6	29·806	94·0	78·1	85·0	76·
7	29·795	95·1	78·6	85·6	78·
8	29·757	95·0	80·7	87·6	75·
9	29·740	94·3	79·7	86·0	76·
10	29·760	95·6	80·6	85·6	76·
11	29·783	95·2	79·0	85·5	76·
12	29·729	94·3	76·7	85·7	77·
13	29·739	95·1	80·5	84·2	78·
14	29·754	93·4	76·9	84·7	75·
15	29·739	95·1	79·7	86·9	75·
16	29·753	94·5	79·8	87·2	74·
17	29·725	94·3	80·3	85·4	75·
18	29·739	96·2	80·3	85·5	77·
19	29·781	95·9	80·4	85·5	79·
20	29·794	95·0	81·0	85·9	79·
21	29·795	88·9	74·0	8C·9	77·
22	29·792	92·0	78·4	84·3	78·
23	29·846	92·0	79·3	85·0	77·
24	29·851	92·3	79·5	84·3	77·
25	29·804	94·7	78·2	83 9	77·
26	29·788	91·9	77·6	84·6	76·
27	29·806	93·3	77·5	84·9	77·
28	29·776	92·6	80·3	85·9	77·
29	29·756	95·0	80·4	84·7	78·
30	29·740	93·9	77·9	85·1	77·

The Standard Barometer and T
and the Daily Means are obtained b
twenty years' observations. The C
Sea, and the Receiver of the Rain-
Rain registered are for the current

PART IV

MEDICAL INTELLIGENCE.

Civil Dispensaries.

PUBLIC DEPARTMENT.

Proceedings of the Madras Government, 5th October 1866.

Read the following :—

No. 68. MINUTE by the Right Honorable the PRESIDENT dated 20th September 1866.

I took occasion, on my recent passage through Coimbatore, to visit the Civil Dispensary at that place, and I was extremely concerned to remark the indigence, neglect and disorder which prevail in that Institution.

2. There were only five in-door patients, one of whom was a woman with her infant child. This state does not at all correspond to the probable necessities of a place possessing between twenty and thirty thousand inhabitants. It implies a want of confidence on the part of the population, and a want of efficiency on the part of the establishment.

3. The furniture of the male Ward, such as bedsteads, pillows, coverlids, &c., &c., was extremely dirty and deteriorated. The body of one patient, suffering from a fracture of the thigh, was filthy in the extreme. The rest were probably little better. The room itself was dirty. The Medical Stores were slovenly or ill-arranged. The registers were imperfectly kept, or not written up. The single female patient was lying on the floor, in an apartment partly filled with rubbish and broken furniture, more like a beggar in a Chuttrum than a female patient in a Hospital under civilized and Christian superintendence.

4. I was shown an empty room, which, I was told, belonged to the sick of the Police; but there were no Police patients on the premises, though about twenty men of the force were off duty on account of illness, and were treated in their Lines—a system which cannot, I imagine, be advantageous either for the sick or the Physi-

cian. I pass over this at present, for I understand that difficulties are attached to the treatment of the Police in Civil Dispensaries. Those difficulties ought not to exist.

5. My reflections on the discreditable state of the Dispensary were met by Assistant Surgeon Roberts with the simple assertion that its resources were restricted to the sum of Rupees 70 per mensem, the interest of Rupees 20,000, originally subscribed by the public at Coimbatore for the support of the Institution; and reference to the monthly accounts of the Hospital showed that the sum referred to was punctually disbursed for the most indispensable objects.

There is no current subscription whatever at Coimbatore for the support of the Hospital.

I do not think that the poverty of the Institution exonerates the Assistant Surgeon and the Native Apothecary from the charge of indifference and negligence in the discharge of their duties; but the Assistant Surgeon has recently come to the Station, and the Apothecary has, I believe, applied for his retirement. There is no doubt that a want of resources, which stimulates some minds to additional exertion, has a depressing effect upon others. I am willing, on this occasion, to take a considerate view of the conduct of Mr. Roberts, and I prefer to look to the improvements of the future, rather than to the errors of the past.

6. In my recent tour to the North, I have received an unsatisfactory impression of the state of the Civil Dispensaries. I may have been unlucky; but I fear that these establishments are on a low footing in general, and that there is a certain want of professional zeal and pride on the part of the Medical Officers of all ranks. This defect requires to be corrected by the admonitions and encouragements of the Medical Inspectorate, and by a livelier interest in the welfare of the Dispensaries on the part of the Members of the Civil Service and of the Native Community.

7. The Dispensaries receive their Medical Officers and their Medicines from Government; for all other objects they depend on private subscriptions. It is, therefore, impossible to enforce an absolutely uniform system of apparatus and furniture; much will still depend on local circumstances.

8. I think, however, that the Principal Inspector General should issue a Circular Instruction to his Medical Subordinates, stating the description of bedding, hospital furniture, and hospital dress, which, it is *desirable* to have in the Civil Dispensaries for men and women, enforcing a higher view of professional duty than that which has recently prevailed, and enjoining the Medical Officers to promote the

contemplated improvements by every means in their power, in conjunction with the Civil Officers of Government.

9. With respect to the particular case of the Dispensary at Coimbatore, I wish a copy of this Minute to be forwarded to the Collector, with an expression of opinion on the part of Government that his influence with the people of the town might properly be employed with the view of raising (1) a subscription of about Rupees 1,000 to renew and improve the furniture of the Hospital, and (2) a current monthly subscription of about Rupees 100 to maintain it in a state of efficiency and decency.

10. Such moderate efforts on the part of the Native Community are not without example. At Cuddapah, I understand that there is a model Civil Dispensary. There is no reason to suppose that the people of Coimbatore are deficient in liberality. The original subscription for the endowment of the Dispensary reflects credit on them, and they would probably obey an impulse judiciously given by the local authority.

(Signed) NAPIER.

No. 69. ORDER THEREON, 5th October 1866, No. 1018.

Ordered that a copy of the foregoing Minute of the Right Honorable the President, be forwarded to the Principal Inspector General, Medical Department, and the Collector of Coimbatore.

2. Dr. Roberts' recent appointment may be accepted as in some degree an excuse for the miserable condition of the Dispensary; but he must clearly understand that the Government expect much greater attention to the Institution on his part, for the future.

3. The Principal Inspector General will take due notice of the Apothecary's conduct.

4. The Principal Inspector General will adopt the measures proposed in paragraph 8 of His Excellency's Minute, and will ensure the periodical inspection of these Institutions wherever they exist. The reports of these inspections should be sent to the Principal Inspector General (copies being furnished to the Collector) as soon as practicable and, at the close of each year, they will be duly noticed by him in his annual report to Government.

5. The Collector of Coimbatore will use his influence with the people of Coimbatore, with the view of raising funds, as suggested in paragraph 9 of His Excellency's Minute.

6. These Proceedings will be circulated to all Collectors, for their information.

7. There can be no question of the great amount of good which Civil Dispensaries are calculated to work, if they are properly managed; but the success of such Institutions depends largely on the interest taken in them, and the supervision exercised over them, by the Public Functionaries, European and Native, of the places where they are established. The Government trust that the circulation of these papers will serve to remind their Officers of the obligation they are under to exert their influence in properly maintaining, as well as originating, such useful Institutions.

The following circular has been issued with regard to the above:—

Office of Principal Inspector General, Medical Department, Fort Saint George, 13th October 1866. From the Secretary, Principal Inspector General, Medical Department, Fort Saint George, to the Deputy Inspector General of Hospitals, — Division.

SIR,—In forwarding the accompanying Proceedings of the Madras Government, for your information and guidance, I am desired by the Principal Inspector General to make the following observations in regard to the provision of Hospital furniture, clothing, &c., for Civil Dispensaries, and to request that you will call the attention of all Medical Officers and Subordinates in charge of those Institutions to the following points:—

1. *Hospital Cots.*—Should be uniform in size and shape. They are best constructed of iron. Periodical painting of the iron work with *coal tar*, and drying of the same in the sun is the best mode of preserving these cots free of vermin.

For all ordinary cases amongst Natives the iron cots should be boarded; but it is advisable that, for special cases, a few cots should be provided with coir mattrasses.

2. Hospital bedding and clothing should ordinarily consist of the articles laid down in paragraph 8, Section XI., Medical Code. The quantities to be kept in store must vary with the average number of sick. Instead of Cumblies or country blankets, the Principal Inspector General recommends the use of red blankets of European make, as being both more sightly in appearance and more durable.

3. As a rule, patients' own clothing on admission should be taken from them, washed, and ticketed before being placed in the Store-room, and finally returned to them on leaving hospital. With caste patients or persons who object to use hospital clothing, means

should be adopted to ensure cleanliness and change of attire as often as may be needed.

4. The scale of diet, which has recently been sanctioned for the use of Native and East Indian patients in the Madras General Hospital, might be appropriately introduced in some of the Mofussil Civil Dispensaries, provided that the Committees of Management see no objection on the score of expense. The diet table is appended.*

> "11. As it will conduce greatly to the "regularity, order, and efficiency of these "hospitals to be frequently visited by the "chief local authorities, Judges and Collec-"tors and Magistrates at Civil Stations, "and Commanding Officers at Military "Cantonments are requested to make occa-"sional inspections, and institute enquiries "into the comfort and diet of the patients, "attending to any complaints that may be "made, and bringing to the notice of the "Surgeon any irregularities or inattention "which may be observed."

5. The rule laid down in paragraph 11, Section XI, Medical Code, would appear to have become in most instances a dead letter.

You will be so good as to ascertain and note in your Inspection Reports of Civil Dispensaries how far it is carried out. To enable you the better to do this, you will be so good as to direct the Medical Officer of each Institution within your circle, to open a "Visitors' book," in which Government Officials and other visitors may record their observations. You will note the tenor of these remarks in your Annual Inspection Reports.

On Feeding Cattle upon the Prickly Pear.

F. Day, Esq., F. L. S., F. Z. S., &c., has forwarded us the following:—

As an attempt is now being made in Madras and elsewhere to utilise the prickly pear hedges by employing the leaf as food for cattle, I beg to draw attention to the following observations in the *Practical Mechanic's Journal* for Sept. 1st, 1866.

"Those who have been in Asia Minor or Sicily will have seen the blind men by the way sides, whose eyes have been destroyed by pruning and gathering the prickly pears *(Opuntias)* whose microscopic spines, borne upon the wind, are not sharper than are the edges of particles of ground glass."

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* See pages 283, 284 of vol. ix of this Journal.—Ed. M. Q. J.

Order of the Madras Government on the Report on Vaccination for 1865.

PUBLIC DEPARTMENT.

Proceedings of the Madras Government.

Read the following letter from the Principal Inspector General, Medical Department.

Here enter 11th May 1866, No. 169.

ORDER THEREON, 22nd September 1866, No. 959.

1. With the letter above recorded the Principal Inspector General, Medical Department, submits the Report of the General Superintendent of Vaccination, showing the results of the operations of the Vaccine Department during 1865.

2. The Department was re-organized during the year, and as the new arrangements were not fully completed until the last quarter, the decrease in the number of persons vaccinated, as compared with that of 1864, is satisfactorily accounted for.

1864...	3,11,587.
1865...	1,91,394.

3. The present Returns, moreover, may be accepted as more trustworthy than those of former years.

4. The Government concur in the advantages of the measure proposed by the General Superintendent, that each Deputy Superintendent should be supplied with a box of medicines for the purpose of affording medical aid to applicants on their tours, provided, of course, that this is kept in due subordination to the proper duties of these Officers. This arrangement was always intended, as stated in paragraph 3 of the letter to the Supreme Government, dated 17th August 1864, No. 939, and will be carried out at once. The Government do not, however, see the necessity of attaching a lascar to each Deputy Superintendent, as one of the two Peons attached to each Vaccine party can carry the medicine chest.

5. The unsuitableness of the building in Chintadrepettah as a Vaccine Depôt, as represented by the General Superintendent in paragraph 37 of his report, is very apparent. The building serves also as a Dispensary, and as Mr. Shaw is of opinion that it might be now closed both as a Dispensary and as a Vaccine Depôt, the measure will be carried out as soon as practicable, and the patients transferred to the Out-patient Department of the General Hospital.

6. The Government fully approve of the proposition for extending the benefits of Vaccination through the aid of the local Municipal Associations. The attention of the Presidents of these bodies will accordingly be drawn to the subject.

7. The proposals of Dr. Shortt and Mr. Shaw for the partially

re-modelling and strengthening the Vaccine Department, so as to render it more equal to the requirements of the Presidency, is now engaging the attention of Government, and renders it unnecessary for them, on this occasion, to notice Mr. Shaw's remarks on the expediency of granting pensions to the Vaccinators, on the comparative inefficiency of the Hospital Assistants, &c.

8. In concluding this brief review of the operations of the year, the Government deem it only due to Dr. Shortt to record their approval of his judicious arrangements in organizing and working his staff of Vaccinators, and his own zealous exertions in supervising their work.

9. The Government also notice with pleasure the efficient aid afforded to Dr. Shortt by the several Deputy Superintendents.

New Rules for the Supply of Surgical Instruments to Medical Officers.

Fort St. George, 16th October 1866.

Medical Department, Surgical Instruments.

No. 379 of 1866.—In assimilation with the practice in Bengal, the Governor in Council is pleased to direct the substitution of the following rules for paragraph 41, Section V, page 59 of the Madras Medical Code, with a view to regulate the issue from the Government Stores, of Surgical Instruments to Civil and Military Hospitals.

2. Henceforth these Instruments will be attached to the charge and not to the individual Medical Officer by whom the charge is held. They will be supplied from the Public Stores on indents countersigned by the Administrative Medical Authorities as follows :—

To a full Regiment of British Cavalry or Infantry ...... one Capital or complete case of Field Instruments and two pocket cases.

„ Head Quarters of Brigade, Royal Artillery......	One Capital and one pocket Case.
„ Battery of Horse Artillery...	
„ Light Field Battery of Artillery..	
„ A full Regiment of Native Cavalry or Infantry...........	
„ Wings of Regiments, whether European or Native, when detached from Regimental Head Quarters...........	
„ Garrison Batteries of Artillery, when in charge of a separate Medical Officer.......................................	
„ Detachment of Troops in charge of a Medical Officer...	
„ Jails, Civil Hospitals, and Dispensaries..........................	

3. These Instruments will be kept in the Surgery, subject to the rules now in force, to secure the condition and sufficiency of all other Surgical Equipment, &c., belonging to Hospitals. This will necessitate their periodical examination by inspecting Medical Officers, as heretofore; their inclusion in the periodical Stock-taking, and examination in common with all other Medical Stores; and the transmission half yearly of a return of the instruments to the Medical Examiner.

4. On all occasions involving change of duties, the relieved Medical Officer is to obtain triplicate receipts, indicating the nature, completeness, and general condition of the instruments he has made over to his successor, one copy being forwarded to the Medical Examiner, one lodged in the Hospital records, and one retained as his own voucher.

5. On the return to Regimental Head Quarters of Wings of Regiments and Detachments; on relinquishing charge of a Garrison Battery to another Medical Officer having a charge with like instruments assigned to it; and, generally, on the completion of all duties which call for the maintenance of a separate set of instruments, the Medical Officer will return the instruments to the Presidency or Divisional Medical Storekeeper, from whom receipts in duplicate will be obtained, one to be forwarded to the Medical Examiner, the other to be retained as his voucher.

6. When instruments may be damaged or lost, the value of such instruments will be recovered from the Medical Officer responsible for their safe custody, unless the injury or loss is explained (through the Inspecting Medical Officer) to the satisfaction of the Principal Inspector General, Medical Department. In the case of loss satisfactorily accounted for, the sanction of Government to the instruments being written off the returns, must be obtained.

7. Instruments becoming unserviceable or requiring repair, are to be returned into the Public Stores; the sanction of the Inspecting Medical Officer being requisite for this transfer, as well as for the issue on the Indent of the Executive Medical Officer of fresh instruments from the Government Stores. These Indents are to be furnished in duplicate. One copy for Store record, the other to be forwarded to the Medical Examiner.

NOTE.—A separate printed copy of the above order is furnished with each number of the present issue of this Journal, for the convenience of Medical Officers, who can gum the sheet into its proper place in their copies of the Medical Code.—ED. *M. Q. J.*

Organization of the Administrative Medical Staff.

In continuation of G. G. O. Nos. 1061 and 1062, dated 23rd December 1864,[*] and under instructions from the Right Hon'ble the Secretary of State for India, concurred in by the Hight Hon'ble the Secretary of State for War, the Governor General in Council is pleased to notify that the following arrangements for the organization of the administrative staff of the British and Indian Medical Services in this country, have been sanctioned by Her Majesty's Government:—

British Medical Service.—The staff of the Medical Department of the British Forces, will be composed as follows:—

BENGAL:

1 Inspector General,
† 6 Deputy Inspectors General.
‡ 2 Staff Surgeons Major.

MADRAS:

1 Inspector General.
§ 3 Deputy Inspectors General.
|| 1 Staff Surgeon Major,

BOMBAY:

1 Inspector General.
¶ 3 Deputy Inspectors General.
** 1 Staff Surgeon Major.

The staff of the Inspector General in Bengal will consist as at present, of a Secretary and Statistical Officer; and that of the Inspectors General in the Madras and Bombay Presidencies, of an Assistant Surgeon as Secretary and Statistical Officer in one.

The Inspectors General of the British Medical Service in the three Presidencies will no longer be considered as attached to Army Head Quarters, but will be directly subordinate to the Government of India, or to the Government of the Presidency to which they belong; and their offices will henceforward, in like manner with those of the heads of the Indian Medical Department, be at the seat of Government.

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[*] See pages 444 to 455 of Vol. viii. (No. 16) of this Journal.

Circles.

† Presidency.
Lucknow.
Meerut.
Lahore.
Gwalior.
Peshawur.
‡ Allahabad.
Umballa.

Circles.

§ Presidency.
Bangalore.
Secunderabad.
|| Burmah.
¶ Presidency.
Poona.
Mhow.
** Scinde.

Although in future these Officers will be directly subordinate to the Government, and no longer attached to Army Head Quarters, they will continue to furnish such information and returns on all points connected with the health of the British Troops as may be required of them by the Commanders-in-Chief of their respective Presidencies, and generally to obey such instructions as may be issued by those authorities, subject, in each case, to the approval of the Government of India, or of the Government of Fort St. George or Bombay.

The full superintendence—professional and economic—of all British Hospitals, will devolve upon the administrative staff of the British Medical Service, and they will be guided by the rules and practice in force with the Indian Medical Administration, and will, in like manner, be directly responsible to the Government of the Presidency in which they may be serving.

When the necessary promotions and appointments have been made to complete the administrative staff of the British Medical Service now sanctioned for India, arrangements will be made for the re-distribution of the duties between the two Departments—British and Indian.

Indian Medical Department.—The administrative staff of the Indian Medical Department, will be composed as follows :—

BENGAL :

1 Inspector General.
* 11 Deputy Inspectors General.

MADRAS :

1 Inspector General.
† 6 Deputy Inspectors General.

BOMBAY :

1 Inspector General.
‡ 4 Deputy Inspectors General.

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* *Circles of Superintendents,*—

Barrackpore.
Dacca.
Dinapore.
Allahabad.
Lucknow.
Saugor.
Gwalior.
Meerut.
Sirhind.
Lahore.
Peshawur.

† Circles of superintendence to be laid down by the Government of Fort St. George.

‡ Circles of superintendence to be laid down by the Government of Bombay.

The staff of the Inspectors General of the Indian Medical Department will consist in Bengal, as at present, of a Secretary and a Statistical Officer; and in the Madras and Bombay Presidencies, of a Medical Officer as Secretary and Statistical Officer in one.

The Inspectors General of both the British and Indian Medical Service in Bengal will receive a consolidated salary of Rupees 2,700 per mensem, and those in the Madras and Bombay Presidencies, the existing salary of that grade, *viz.*, Rupees 2,500 per mensem. The Deputy Inspectors General in all the Presidencies will receive the consolidated salary of Rupees 1,800 per mensem, as at present fixed for that grade, and the four Staff Surgeons Major, a consolidated salary of Rupees 1,400 per mensem.

The Secretaries to the Inspectors General, and the Statistical Officers in Bengal will receive a staff salary of Rupees 700 and 600 per mensem, respectively; and the Secretaries and Statistical Officers in the Madras and Bombay Presidencies, a staff salary of Rupees 700 per mensem.

These staff salaries are now fixed, subject to the approval of the Right Hon'ble the Secretary of State, and will be granted in addition to the unemployed scale of pay laid down in paragraph 29 of Sir C. Wood's Despatch No. 340 of the 7th November 1864, published in G. G. O. No. 1060 of 23rd December 1864.

The administrative staff of the Indian Medical Department will, so soon as that of the British Medical Service has been completed, be relieved of all control over the Hospitals of British Troops.

In other respects their duties are unchanged.

Although from the changes which have been recently introduced affecting the pay, pension, and promotion of the Indian Medical Service, it has, in all its grades, derived considerable benefit; yet, with a view of rendering the effect of the reduction now proposed in the number of the administrative staff as little as possible prejudicial to the interests of the Officers more immediately concerned, Her Majesty's Government has resolved that the Officers now holding the positions of Inspector General and Deputy Inspector General of the Indian Service shall be permitted, to the extent of the proposed reduction, to retire, when they think proper, upon the rate of pension severally allotted to those grades in paragraphs 36 and 37 of Sir C. Wood's Despatch No. 340, dated 7th November 1864, published in G. G. O. No. 1060 dated 23rd December 1864, without reference to the time served in those grades.

Vacancies caused by such retirements or by ordinary casualties subsequent to the 1st October 1866, the date of the receipt of the instructions of Her Majesty's Government hereby notified, will be allowed to lapse until the establishment is brought to the strength now laid down.

The title of Principal Inspector General will be discontinued in all the Presidencies, when present permanent incumbents holding that designation vacate their offices.

We congratulate our brethren of the British Medical Service on the very great advantages which they obtain under the above "Organization." We say nothing here as to the policy of maintaining separate British and Indian Medical Services, but, accepting the position, we think it a simple matter of justice that the British Service should have its own Administrative Staff.

As regards the Madras Presidency (in which our interest chiefly lies) the new organization gives a great preponderance of Inspectorial Ranks to the British Medical Service.

A reference to the Madras Army List for October shows that, excluding the present Deputy Inspector General, there are 74 British Medical Officers in this Presidency, and the above G. G. O. fixes the Administrative Staff at 5, inclusive of the Staff Surgeon-Major. And the same list shows that there are 173 Medical Officers of the Indian Service, exclusive of the present Inspectors and Deputy Inspectors General, and the G. G. O. fixes the future number of the latter at 7.

There are two or three ways in which the proportion of Inspectorial Ranks to Executive Officers may be calculated.

1*st.*—Roughly, it may be said, that 5 to 74 gives 1 Administrative to every 15 Executive Officers, in the British Service; and 7 to 173 gives 1 Administrative to nearly every 25 Executive Officers in the Indian Service.

2*nd.*—The Staff Surgeon Major may be said not to be entirely an Administrative Officer, so that 4 to 74 gives 1 Administrative to every 18·5 Executive Officers in the British Service; the proportion in the Indian Service remaining as above, 1 to 25 nearly.

3*rd.*—The Inspectors General may be considered as holding appointments of a fixed or office nature, and then the proportion will be, 3 to 74 or 1 Deputy Inspector to every 23·66 Executive Officers for the British Service; and 6 to 174 or 1 Deputy Inspector to every 29 Executive Officers for the Indian Service.

But the fact remains that there is 1 Inspector General and 1 Secretary to 74 Executive British Medical Officers, and but 1 Inspector and 1 Secretary to 173 Indian Medical Officers.

Further, it may be noticed that whereas in the British Service, as a general rule, there are three Medical Officers to one charge, in the Indian Service it is the exception to find more than one Medical Officer attached to any particular charge.

The total gain by the new organization, to the British Medical Service in the Madras Presidency, is :—

	Rs.
1 Inspector General of Hospitals.......	2,500
2 Deputy do.	3,600
1 Staff Surgeon-Major....................	1,400
1 Secretary to Inspector General......	700*
Total monthly gain Rs...	8,200

The total loss to the Indian Medical Service in Madras is :—

	Rs.
1 Inspector General of Hospitals......	2,500
2 Deputy do.	3,600
Total monthly loss Rs...	6,100

And deducting the last named sum from the former, we find the increased demand on the Indian exchequer, under the new arrangement, 8,200—6,100=2,100, or an annual amount of Rupees 25,200.

As before said, we congratulate the members of the British Medical Service on their immense gain, while, at the same time, we deplore the evident fact that the Indian Medical Service is considered of such light moment that it is expected to be grateful that the higher paid appointments to which it *had* to look have been reduced by nearly one-third only of their number, viz., from 10 to 7 ; and to be oblivious of another fact (sadly remembered, though, by the majority) that it is not many years since that these higher paid appointments numbered 13, viz., 3 Members of the Medical Board and 10 Superintending Surgeons.

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* With pay of Rank.

BOOKS RECEIVED.

1.—Report on a Project for the Drainage of the Town of Madras. By Captain Hector Tulloch, R. E. 1865. Gantz Brothers.

2.—A Hand-book of the Trees, Shrubs and Herbaceous Plants, growing in the Madras Agri-Horticultural Society's Gardens and Neighbourhood of Madras. By R. N. Brown. Second Edition, with a Supplement by J. J. Wood, 1866........Higginbotham, Madras.

3.—Report on Vaccination for 1865. Selected from the Records of the Madras Government. Published by Authority. 1866..................Printed by Graves, Cookson and Co.

4.—On the Curability of Certain forms of Insanity, Epilepsy, Catalepsy, and Hysteria in Females. By B. Brown, F. R. C. S. 1866 .... Hardwicke, London.

5.—On Inhalation as a means of local Treatment of the organs of Respiration by atomized fluids and gases. By Dr. Hermann Beigel, 1866....... .... „ „

6.—A Handy-book of Ophthalmic Surgery for the use of Practitioners. By J. Z. Laurence, F. R. C. S., and R. C. Moon, 1866 .... „ „

7.—Skin Diseases; their Description, Pathology, Diagnosis and Treatment. By Dr. Tilbury Fox, 1864 „ „

8.—The action of Fungi in the Production of Disease. By Dr. Tilbury Fox, 1866. Reprinted from the Edinburgh Medical Journal ....Oliver & Boyd, Edinburgh.

9.—Dr. J. Moore Neligan's Practical Treatise on Diseases of the Skin. Second Edition, revised and enlarged, by Dr. Belcher, 1866......... .... Fannin & Co., Dublin.

10.—On the Estimation of Organic matter in Water, with reference especially to Sanitary purposes. By Dr. Angus Smith. 1866. .... Longman London.

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PERIODICALS RECEIVED.

The Indian Medical Gazette. Jany., February and from May to October.

The Edinburgh Medical Journal. July, August and September. (June not received.)

The Medical Mirror;—to October.

The American Journal of the Medical Sciences. July (April not received.)

We have also been advised of the despatch of two parcels of Journals by the long sea route. We hope to announce their receipt in our next number.

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A Hand-book of the Trees, Shrubs, and Herbaceous Plants growing in the Madras Agri-Horticultural Society's Gardens and neighbourhood of Madras. Arranged according to the Natural System. By Robert W. Brown, late Superintendent of the Agri-Horticultural Society's Gardens, Madras. Second Edition, carefully revised, with a supplement by J. J. Wood, Assistant to the Professor of Botany, Medical College, Madras: J. Higginbotham, 1866, 8vo., pages 303 ... ...
Essays and Reports on Operative and Conservative Surgery. By R. G. Butcher, Surgeon and Lecturer on Clinical Surgery to Mercer's Hospital, Dublin, &c. &c. Illustrated by sixty-two lithographic plates, coloured and plain; and several wood engravings. Dublin: Fannin & Co., London: Robert Hardwicke. 1865, large 8vo. pp. 933 ... ...
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